

SONY®

DIGITAL VIDEOCASSETTE PLAYER

MSW-M2100

MSW-M2100P



OPERATION MANUAL
1st Edition (Revised 2)

English

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

This apparatus must be earthed.

For the customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: THIS WARNING IS APPLICABLE FOR USA ONLY.

If used in USA, use the UL LISTED power cord specified below.

DO NOT USE ANY OTHER POWER CORD.

Plug Cap Parallel blade with ground pin
(NEMA 5-15P Configuration)

Cord Type SJT, three 16 or 18 AWG
wires

Length Less than 2.5 m (8 ft 3 in)

Rating Minimum 10 A, 125 V

Using this unit at a voltage other than 120V may require the use of a different line cord or attachment plug, or both. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel.

WARNING: THIS WARNING IS APPLICABLE FOR OTHER COUNTRIES.

1. Use the approved Power Cord (3-core mains lead)/Appliance Connector/Plug with earthing-contacts that conforms to the safety regulations of each country if applicable.
2. Use the Power Cord (3-core mains lead)/Appliance Connector/Plug conforming to the proper ratings (Voltage, Ampere).

If you have questions on the use of the above Power Cord/ Appliance Connector/Plug, please consult qualified service personnel.

For the customers in Europe

This product with the CE marking complies with both the EMC Directive (89/336/EEC) and the Low Voltage Directive (73/23/EEC) issued by the Commission of the European Community.

Compliance with these directives implies conformity to the following European standards:

- EN60950: Product Safety
- EN55103-1: Electromagnetic Interference (Emission)
- EN55103-2: Electromagnetic Susceptibility (Immunity)

This product is intended for use in the following Electromagnetic Environment (s):

E1 (Residential), E2 (Commercial and light industrial), E3 (Urban outdoors) and E4 (Controlled EMC environment ex. TV studio)

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1-1 Features

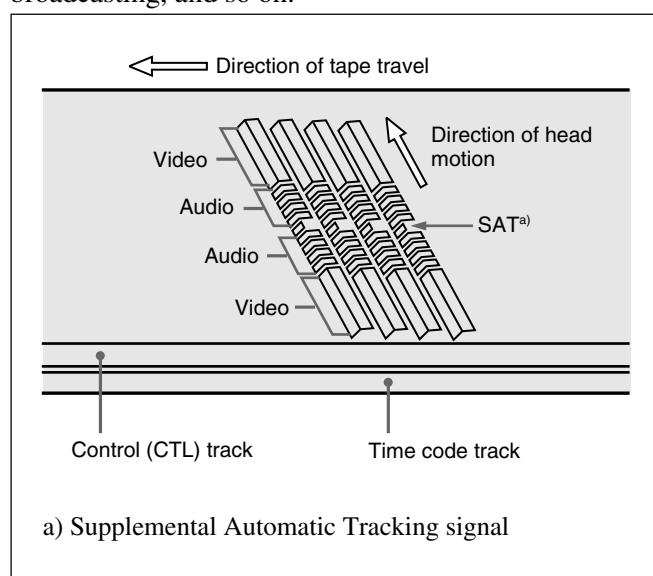
The MSW-M2100/M2100P is a digital videocassette player based on the MPEG IMX format. This unit uses large scale integrated circuits for signal processing, and has a simple internal construction, allowing it to provide functionality at least equivalent to a conventional VTR in a compact (4U size), lightweight, and low power consumption design. It not only offers playback in MPEG IMX format, but can also play back tapes recorded in Betacam SX format, analog Betacam format, or digital Betacam format.

MPEG IMX format

The MPEG IMX format uses the same 12.65-mm width tape as the conventional Betacam series. This economical format uses 50 Mbps high image quality MPEG-2 compression, and offers up to three hours of recording.

The video signal compression, as in the Betacam SX format, uses MPEG-2, and compressed data can be passed directly without loss of quality, not only to VTRs, but also to other devices with MPEG support, such as nonlinear editors or servers. There is thus high compatibility with the next generation of digital television formats supporting MPEG-2.

The audio tracks allow up to eight channels to be recorded, and this also provides future extensibility for multichannel, multilingual broadcasting, data broadcasting, and so on.



High-performance heads and compatibility playback function

The newly developed high-performance heads and dynamic tracking (DT) technology provide high-density playback in narrow tracks with high reliability. In addition to the MPEG IMX playback heads, this unit is also equipped with Betacam SX format playback heads, and analog Betacam DT heads, to provide compatibility playback functions, and allowing a wide variety of recorded resources to be used effectively.

High-precision digital signal processing and range of interfaces

The MPEG IMX VTR digital video signal processing uses 4:2:2 component video signals complying with ITU-R Rec 601/SMPTE 259M, which are compressed with ISO/IEC 13818-2000 MPEG-2 compression. While supporting a wide range of signals for output, all of the VTR internal processing is digital, providing high stability and reliability.

The audio signals, similarly, are based on AES/EBU format, and are subjected to digital signal processing while still uncompressed.

The following interfaces are standard equipment, for ease of connection to different external devices.

- Analog composite signal input/output
- Analog component signal output
- Analog audio signal output (4 channels)
- Serial Digital Interface SMPTE 259M output (component digital video/audio, 8 channels)
- AES/EBU serial digital audio output (8 channels)
- SDTI-CP SMPTE 326M output (MPEG video/audio data)
- Time code output

1-1 Features

High image quality MPEG-2 intraframe encoding at 50 Mbps.

The video signal compression uses MPEG-2 intraframe encoding conforming to 4:2:2 Profile @ Main Level, with a 1:3.3 compression ratio; the data is then recorded with a bit rate of 50 Mbps. With the highly efficient MPEG-2 compression, the image quality is high enough to withstand a range of editing and dubbing operations.

The recorded MPEG-2 data can be passed directly to other nonlinear systems, allowing optimum editing with no loss of image quality.

High quality eight-channel audio

High quality 16 bit/48 kHz digital audio is supported. There are eight digital audio output channels, and four analog audio output channels.

To support even higher quality playback, there is a four-channel mode using 24 bit/48 kHz encoding. Thus this unit is eminently suitable not only for multichannel applications, but also for high quality audio editing.

Playback of SDTI compressed data

This unit is fitted with SDTI-CP output complying with SMPTE 326M, and can therefore be used for transferring MPEG-2 data, audio data, metadata, and so on to a VTR or nonlinear device.

Newly developed multifunction control panel

While a compact 4U size, this unit has a front panel which provides a wide range of functions while maintaining existing operability.

Basic operation buttons and jog/shuttle dial

The basic buttons and jog/shuttle dial for VTR and editing operations are provided in the conventional VTR layout, ensuring continuity with conventional operating panels.

Time data display

This can be selected to display a CTL counter value, time code value, or time code user bits. It can also display edit points and edit durations.

Menu-based control interface

The time data/menu display shows not only various values and settings, but also the pages of a menu system for commonly used functions. You can use the function keys and MULTI CONTROL knob to easily change settings.

Other operation settings, including interfacing with external devices, can be set from the control panel by the same type of setup menu system as on a conventional VTR.

Eight-channel audio level meters

The unit has independent audio level meters and playback level controls for all eight channels. The level meters are on the control panel, so that when the panel is used remotely from the main unit it is still easy to check or adjust the audio levels.

High quality variable speed playback and digital jog sound function

In digital BETACAM or MPEG IMX format playback, the dedicated playback DT heads allow smooth, noiseless playback from -1 to $+3$ times normal speed. In analog Betacam compatible playback also, similar dedicated DT heads allow noiseless playback from -1 to $+3$ times normal speed, and in Betacam SX format compatible playback, special multi-head playback technology allows noiseless playback from -1 to $+2$ times normal speed.

In slow motion operation, the digital jog sound function provides the same ease of operation as a conventional analog VTR.

Wide range of editing functions

Using this unit in combination with a recorder, you can carry out both assemble editing and insert editing automatically. All of the necessary editing functions are provided to set and amend edit points, to preview and review results of editing, and so on.

DMC playback

This allows automatic playback with a varying speed memorized beforehand for the desired segment.

Tele-File functions

Tele-File enables data writing/reading between cassettes with memory labels and VTRs. It increases the efficiency of operations such as cuing up and playback, and source data management.

Remote control function

This unit can be controlled from an external remote controller or editor through an interface complying with RS-422A (serial 9-pin). Since two remote control connectors are provided, you can also control a number of VTRs simultaneously.

Additionally, a parallel (50-pin) interface is also fitted as standard, supporting easy external control through the parallel interface.

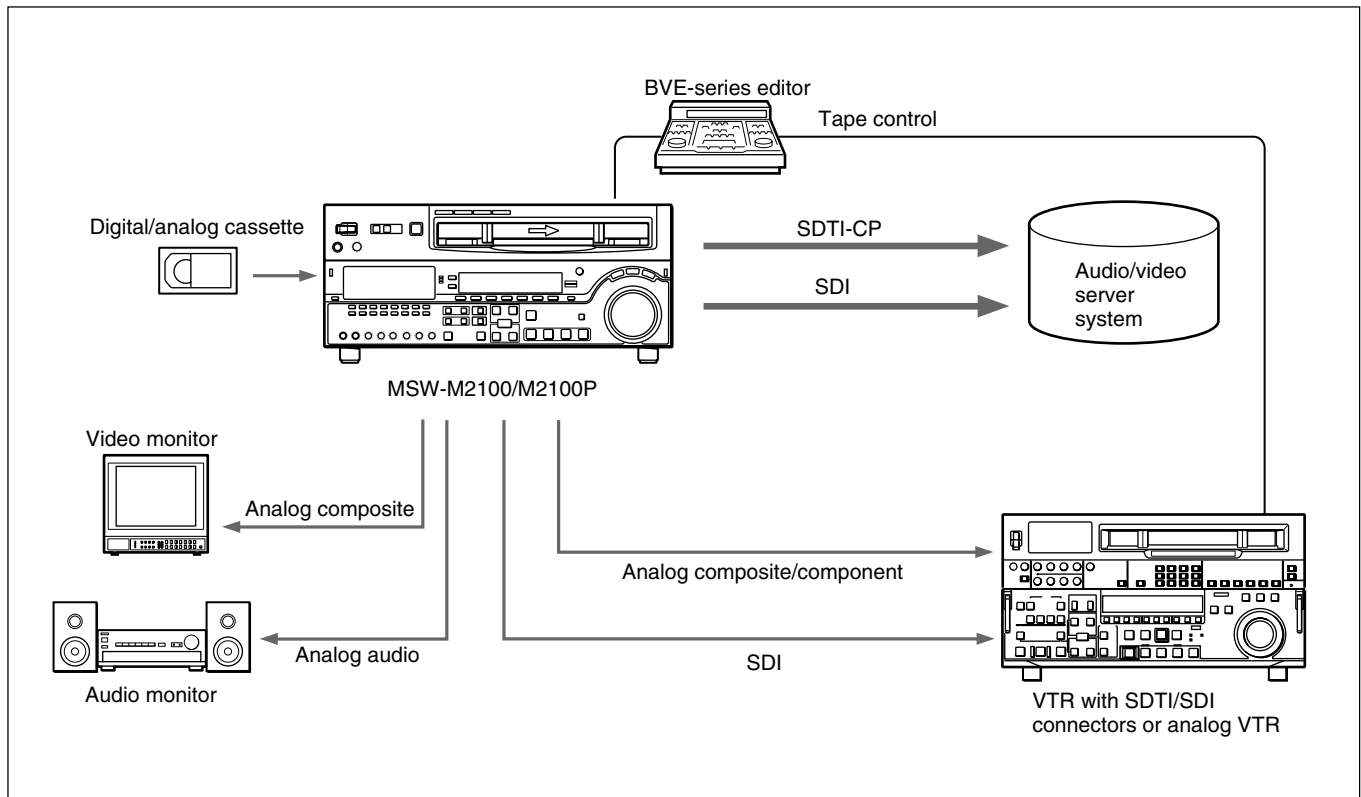
Rack mounting

Using the optional RMM-131 Rack Mount Adaptor, you can mount the unit in a standard EIA 19-inch rack.

For details of rack mounting, refer to the Installation Manual.

1-2 Example System Configuration

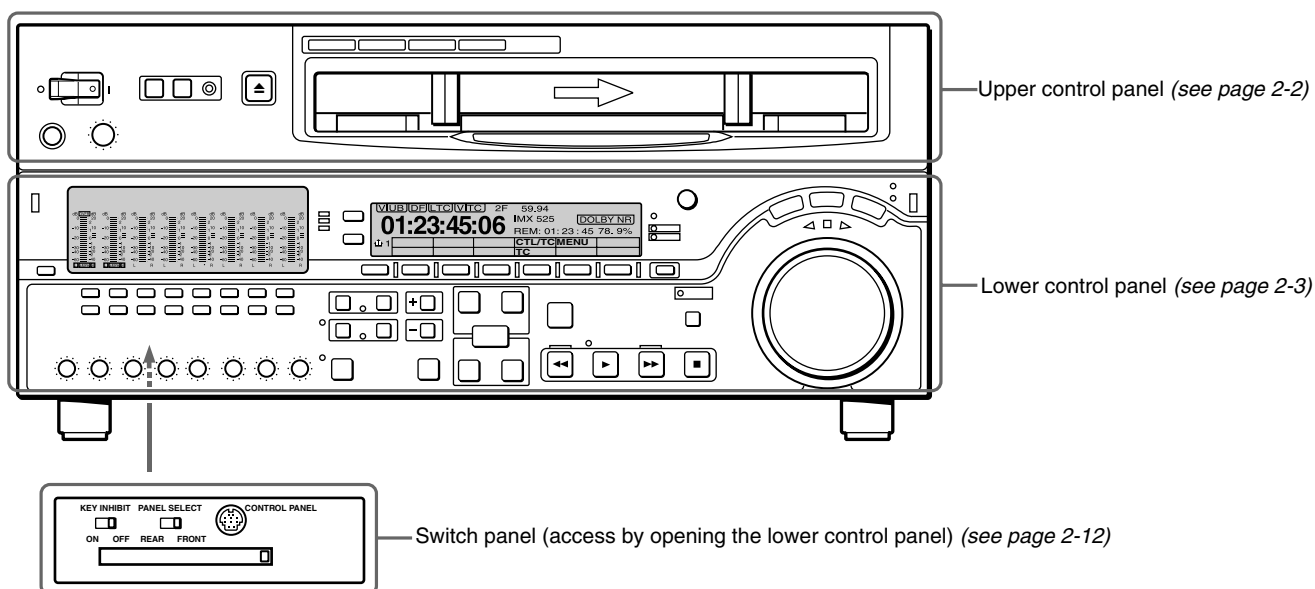
The following conceptual diagram shows an example of use.



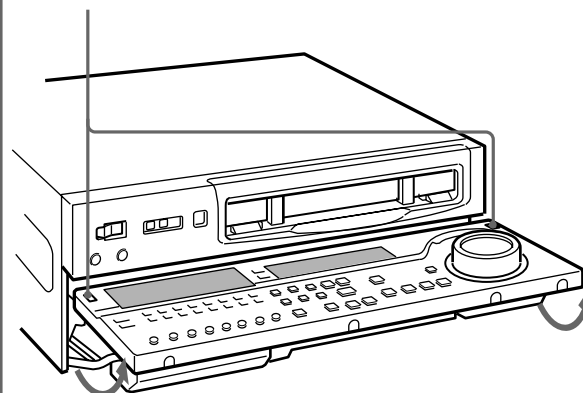
2-1 Control Panels

There are three control panels, as follows:

- Upper control panel
- Lower control panel
- Switch panel

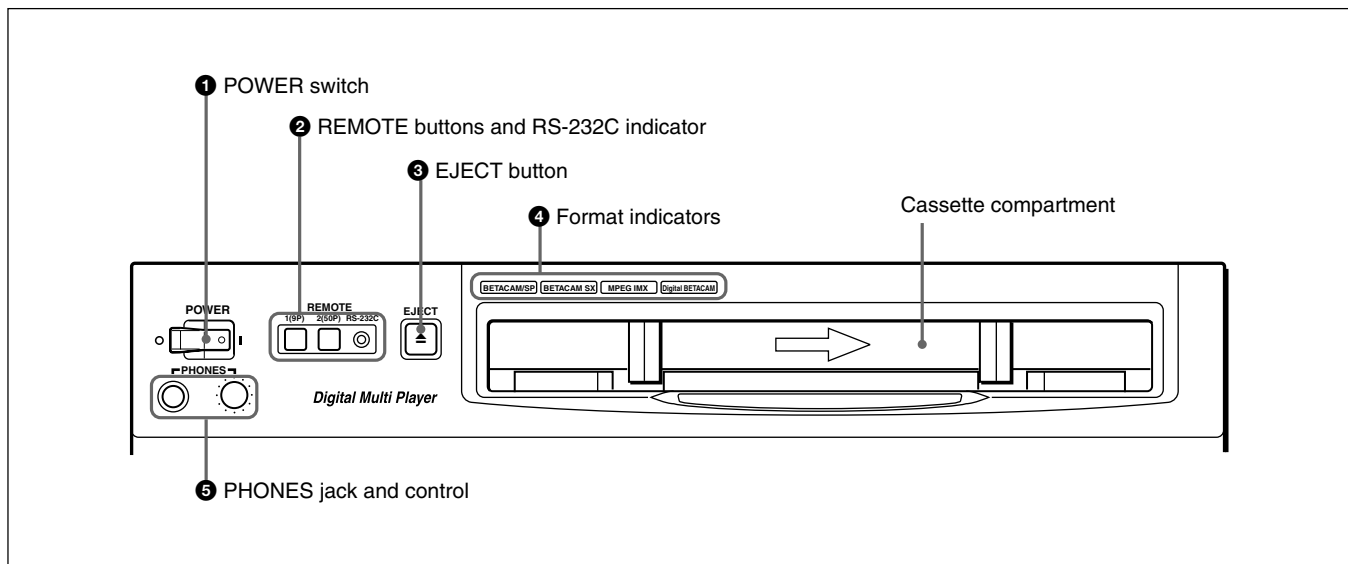


Lower control panel unlock buttons
Pushing in these buttons allows you to open the lower control panel.



2-1 Control Panels

2-1-1 Upper Control Panel



1 POWER switch

Pressing the 'I' side of the switch powers the unit on. When the unit is powered on, the audio setting display section (*see page 2-4*) and the time data/menu display section (*see page 2-6*) light.

2 REMOTE buttons and RS-232C indicator

Press one of these buttons to select the device controlling this unit.

1(9P): This unit is controlled by the device connected to the REMOTE 1-IN(9P) or REMOTE 1-OUT(9P) connector. The button lights.

2(50P): This unit is controlled by the device connected to the REMOTE 2 PARALLEL I/O(50P) connector. The button lights.

RS-232C indicator: This indicator lights when this unit is controlled through the RS-232C connector.

3 EJECT button

To eject the cassette, press this button. While the cassette is being ejected, this button lights.

When using the lower control panel as remote control panel, press the DELETE button and STOP button at the same time to eject the cassette.

Note

Ejecting with the EJECT button is a local operation. It is not possible to eject a cassette in another unit by remote control.

4 Format indicators

The BETACAM/SP, BETACAM SX, MPEG IMX, or Digital BETACAM indicator lights depending on the current playback format.

The BETACAM/SP indicator lights when the format is Betacam or Betacam SP.

5 PHONES jack and control

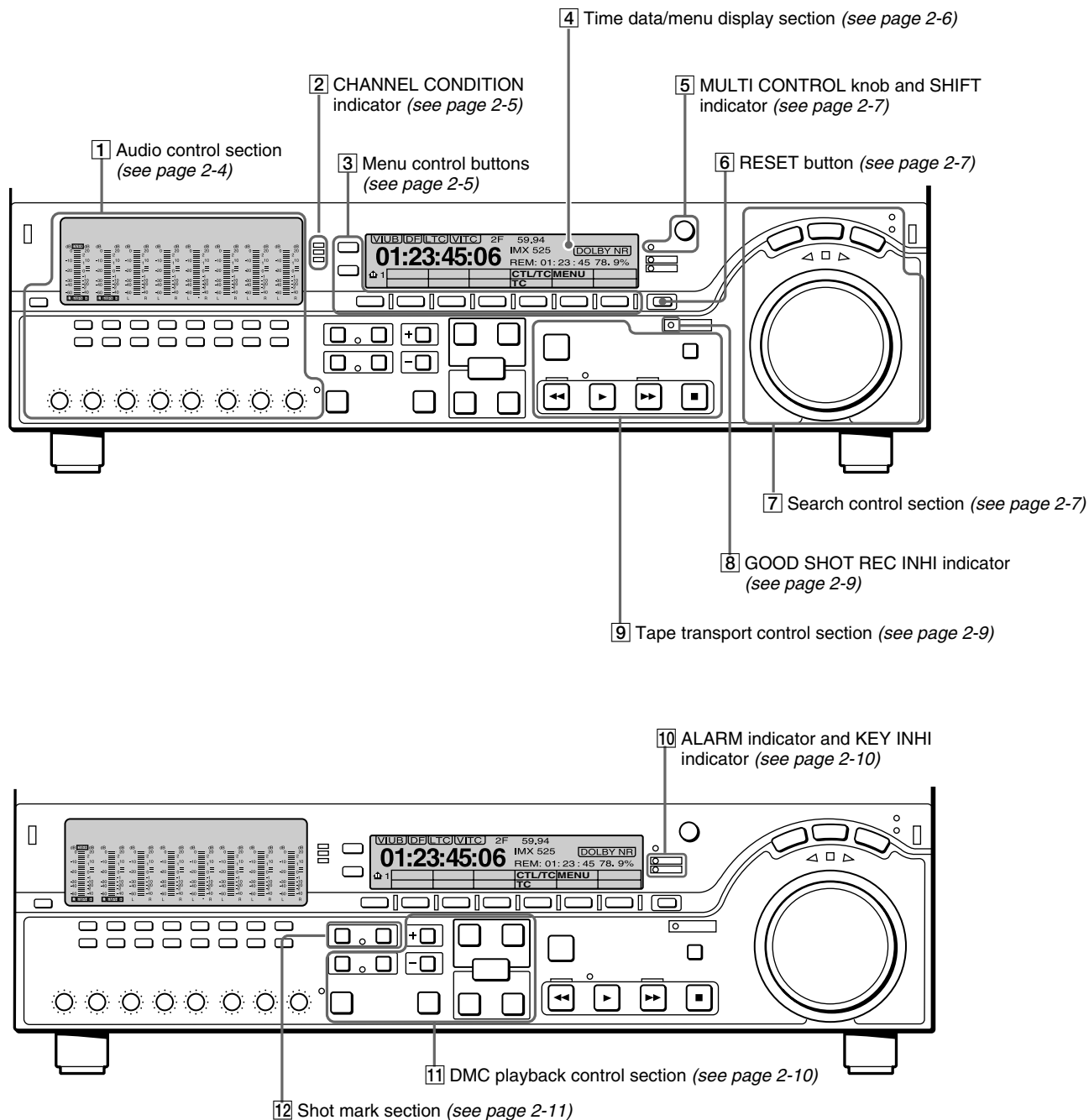
Connect stereo headphones with an impedance of 8 ohms to monitor the sound during playback.

The control knob adjusts the volume.

It is possible to set an internal board switch so that the output volume from the MONITOR OUTPUT L and R connectors is controlled simultaneously.

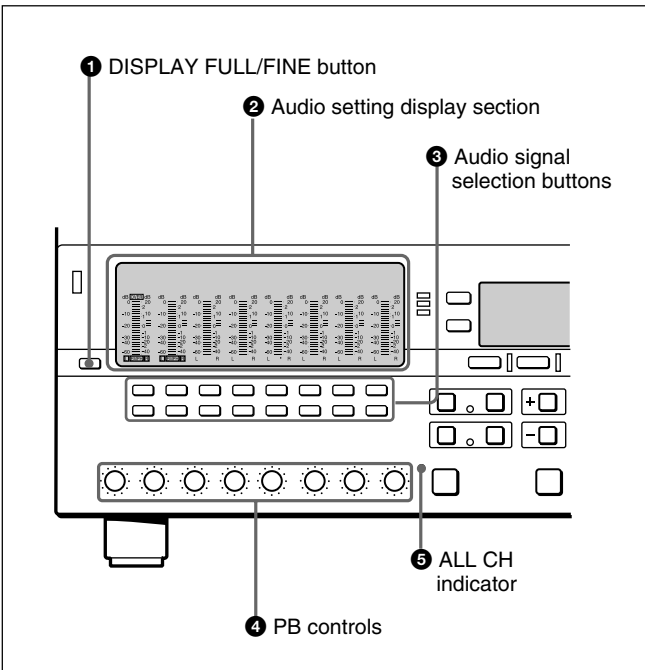
For details, refer to the Installation Manual.

2-1-2 Lower Control Panel



2-1 Control Panels

1 Audio control section



In the audio control section, you can select and display output signals for audio channels 1 to 8.

Note

When a tape recorded in MPEG IMX 24-bit/4-channel mode is played back, the audio setting display section displays only audio signal settings for channels 1 to 4. Audio signal settings for channels 5 to 8 are not displayed.

When a digital Betacam tape is played back, the digital audio levels are displayed on the level meters for channels 1 to 4 in the audio setting display section ②. The level meter for channel 7 displays the cue audio level always in FULL mode (see the description of the DISPLAY FULL/FINE button ①).

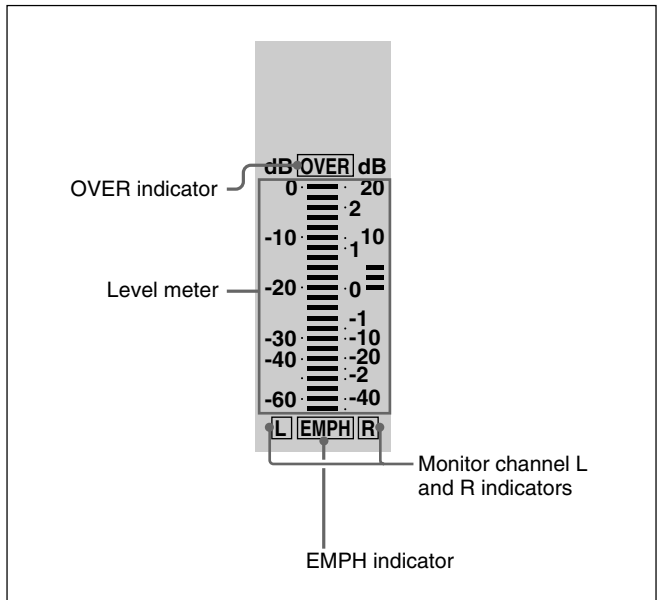
① DISPLAY FULL/FINE button

Pressing this button toggles the display mode of the level meters in the audio setting display section between FULL and FINE.

FULL: The display covers the range -60 dB to 0 dB or -40 dB to $+20$ dB as selected using setup menu item 806. In this mode the segment of the display corresponding to the current audio level and all lower segments light.

FINE: The display is enlarged, with a step of 0.25 dB. A segment indicating the reference level lights. In this mode only the segment of the display corresponding to the current audio level lights. If the audio level exceeds the maximum display level, the top segment flashes, and if the audio level goes below the minimum display level, the bottom segment flashes.

② Audio setting display section



OVER indicator: While the unit is in playback mode, this lights when the level of the audio signal on the corresponding channel exceeds the maximum level that can be indicated on the level meter.

Level meter: Displays the audio signal level when the unit is in playback mode. You can use the setup menu to switch the display mode between PEAK.0 (0 dB is maximum level) and REF.0 (0 dB is the reference level). You can also use the DISPLAY FULL/FINE button ① to enlarge the display only near the reference level.

When a digital Betacam tape is played back, the level meter for channel 7 displays the cue audio level.

Monitor channel L and R indicators: Indicate whether or not the signals of the track are output to the MONITOR OUTPUT L and R connectors or the PHONES jack. 'L' lights to indicate output to the left monitor channel, and 'R' lights to indicate output to the right monitor channel.

EMPH (emphasis) indicator: During playback, this lights when the emphasis setting is on for the audio signal on the corresponding track.

③ Audio signal selection buttons (CH1 to CH8)

The buttons in the upper and lower rows select tracks to be output to the MONITOR OUTPUT L and R connectors on the connector panel or the PHONES jack on the upper control panel. The buttons in the upper row (L row) select tracks for output to the MONITOR OUTPUT L connector, and the buttons on the lower row (R row) select tracks for output to the MONITOR OUTPUT R connector. You can obtain the mixed output of multiple tracks by simultaneously pressing multiple buttons in the upper or lower rows. For example, simultaneously press the CH1, CH2, and CH3 buttons in the upper row to mix the signals of audio tracks 1, 2, and 3 for output to the MONITOR OUTPUT L connector.

④ PB (playback) controls

These adjust individually the playback levels on channels 1 to 8.

During playback, press to protrude the control knobs and adjust the level while monitoring the audio level indication on the level meters in the audio setting display section.

When the control knobs are pushed in, the playback levels return to the preset levels, and cannot be adjusted.

When playing back a digital Betacam tape, you can use the control knob for channel 7 to adjust the cue audio playback level.

About the CH8/ALL CH (channels) control

You can choose to use the rightmost CH8/ALL CH control to adjust the playback level of all channels. This setting is made in setup menu item 132. When adjustment by the CH8/ALL CH control is enabled, the CH1 to CH7 controls are disabled.

⑤ ALL CH (channels) indicator

This indicator lights when adjustment of all audio channels by the rightmost PB control (CH8/ALL CH) is selected.

2 CHANNEL CONDITION indicator

A three-color indicator shows the state of the playback signal.

Green: The state of the playback signal is good.

Yellow: The playback signal is somewhat deteriorated, but playback is possible.

Red: The playback signal is deteriorated.

When this indicator remains on, head cleaning or an internal inspection is necessary.

Note

During analog playback, indications are by green and red only.

3 Menu control buttons

These buttons are used for function menu (*see the following section “Overview of the function menu”*) and setup menu (*see Chapter 8*) operations. The page buttons (▼, ▲, and HOME) select menu pages, and the function buttons (F1 to F6) make function settings.

▼: Selects the next page in the order HOME → 1 → 2 → 3 → 4 → 5 → HOME.

▲: Selects the next page in the order HOME → 5 → 4 → 3 → 2 → 1 → HOME.

When there are setup menu definitions on page 6, page 6 is displayed between page 5 and the HOME page.

HOME: Selects the function menu HOME page.

When at least one user-defined function key is set in the HOME2 page, pressing the HOME button toggles the menu page display between HOME and HOME2.

F1 to F6: Make settings for the items displayed in the upper line of the menu display (the menu item display line). Pressing one of these buttons changes the setting for the corresponding item and displays the setting in the lower line of the menu display.

If there is no setting displayed in the lower line of the menu display, even though a menu item is displayed in the upper line, pressing the corresponding function button moves to a lower menu level.

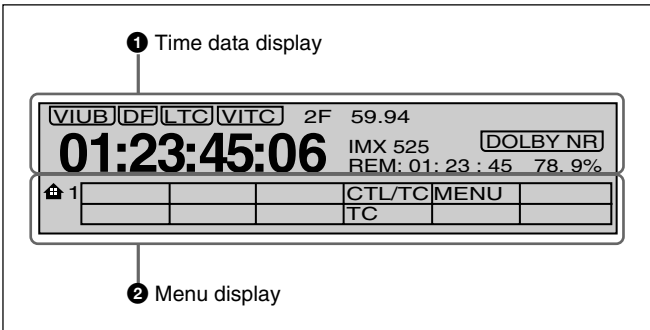
Overview of the function menu

The function menu provides convenient access to frequently used function settings, such as video signal output level and time code settings.

For details on the function menu, see Chapter 7.

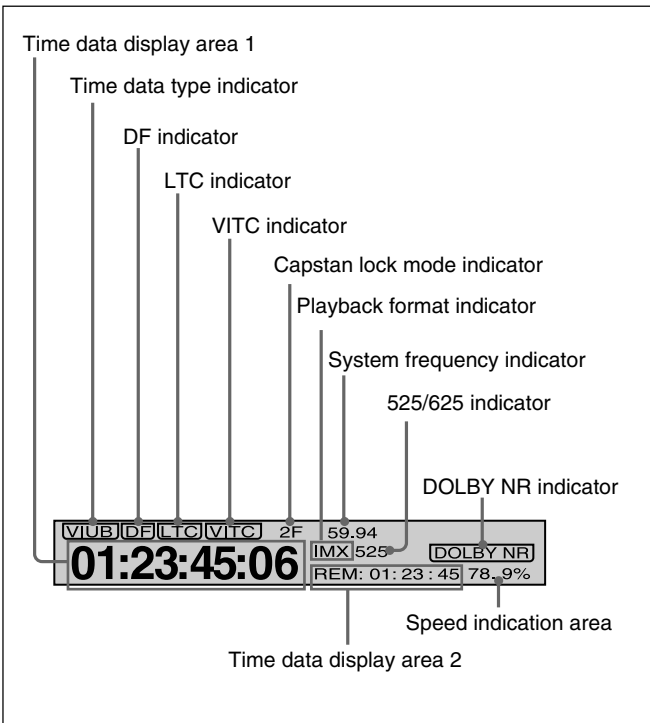
2-1 Control Panels

4 Time data/menu display section



1 Time data display

This displays indicators relating to time data and other indicators.



Time data display area 1

Normally this displays a CTL count, time code value, or user bit value according to the setting in function menu HOME page for F4 (CTL/TC).

Time data type indicator

This indicates the type of data displayed in the time data display area 1.

LTC (longitudinal time code): Time code recorded on a longitudinal track on the tape

LUB: LTC user bit values

VITC (vertical interval time code): Time code recorded in the vertical blanking interval

VIUB: VITC user bit value

DF (drop-frame) indicator (525-line mode only)

This lights when values of drop-frame mode time code are displayed.

LTC indicator

Regardless of the display in time data display area 1, this indicator lights when LTC values are being read.

VITC indicator

Regardless of the display in time data display area 1, this indicator lights when VITC values are being read.

Capstan lock mode indicator

This indicates the capstan lock mode (2F, 4F, or 8F) set in function menu page 4 or in setup menu item 106.

Playback format indicator

This indicator shows the current playback format.

DB: Digital BETACAM format

IMX: MPEG IMX format, bit rate 50 Mbps, 8 audio channels

IMX4: MPEG IMX format, bit rate 50 Mbps, 4 audio channels

SX: Betacam SX format

SP: Betacam SP format

No display: Betacam format

System frequency indicator

Displays the current playback field frequency, and the bit rate of recording or SDTI-CP output.

525/625 indicator

This indicator shows the number of scan lines for the television standard (525 (NTSC) or 625 (PAL)) selected using setup menu item 013.

Time data display area 2

Displays data types and time data such as the time code of edit points and the total time of that tape. The following data types are shown.

TOTL: Total time of the tape.

REM: Remaining time on the tape.

Depending on the setting of F5 (T INFO) on function menu page 3, either TOTL (TOTAL) or REM (REMAIN) is displayed.

The values displayed are approximate values calculated on the basis of the detected tape diameter. They are not precise to units of seconds.

IN: video IN point
OUT: video OUT point
AIN: audio IN point
AOUT: audio OUT point
DUR: duration value

DOLBY NR indicator

This lights when the Dolby noise-reduction¹⁾ circuit is functioning.

Speed indication area

This indicates the speed of a DMC playback.
 In the time data display area 2, “DMC SPD” is displayed during a DMC playback.

② Menu display

This displays the function menu and setup menu.

For details on the function menu, see Chapter 7 and for details on the setup menu, see Chapter 8.

⑤ MULTI CONTROL knob and SHIFT indicator

In function menu operations, rotate the MULTI CONTROL knob to change settings that flash in the menu display section. In setup menu operations, rotate this knob to select menu items.

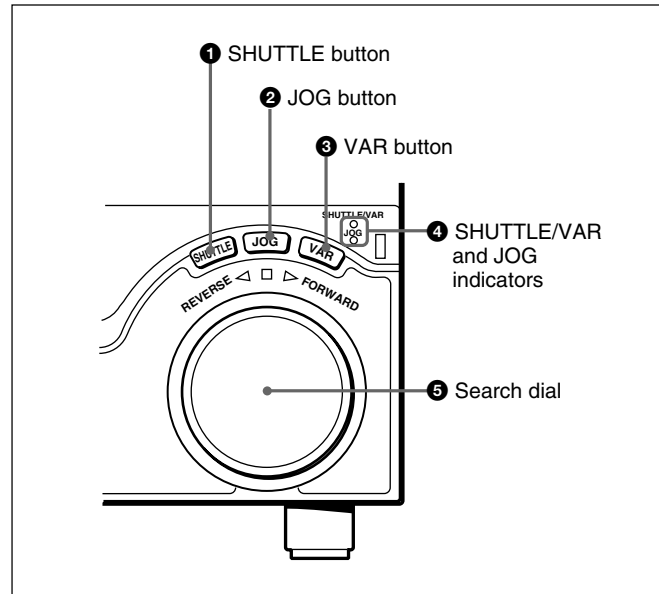
The SHIFT indicator lights when you press this knob in. In this state, the value of the setting changes by a greater amount when you rotate the knob.

⑥ RESET button

To reset the CTL value displayed in time data display area 1, press this button.

Resetting the CTL value erases all edit points.

⑦ Search control section



① SHUTTLE button

To use the search dial for playback in shuttle mode, press this button, turning it on.

For details of playback in shuttle mode, see the description of the search dial ⑤.

② JOG button


To use the search dial for playback in jog mode, press this button, turning it on.

For details of playback in jog mode, see the description of the search dial ⑤.

③ VAR (variable) button

To use the search dial for playback in variable speed mode, press this button, turning it on.

For details of playback in variable speed mode, see the description of the search dial ⑤.

1) Dolby noise reduction: Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. “DOLBY” and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

2-1 Control Panels




4 SHUTTLE/VAR and JOG indicators

Either of the indicators is lit to show the current search mode or the mode used last. When the unit is turned on, the SHUTTLE/VAR indicator lights.

When the SHUTTLE/VAR indicator is lit: Shuttle or variable speed mode

When the JOG indicator is lit: Jog mode

5 Search dial

Turn this to carry out playback in the modes shown in the following table. Turning the dial clockwise lights the  indicator and plays back in the forward direction. Turning the dial counterclockwise lights the  indicator and plays back in the reverse direction. When the tape is stopped or the unit is turned on, the  indicator lights. Pressing the dial toggles between shuttle and jog modes or between variable speed and jog modes.

You can carry out noiseless playback in the following speed ranges depending on the tape format.

Digital Betacam: -1 to +3 times normal speed

MPEG IMX: -1 to +3 times normal speed

Betacam SX: -1 to +2 times normal speed

Betacam/Betacam SP: -1 to +3 times normal speed

Playback modes using the search dial

Playback mode	Operations and functions
Shuttle	<p>Press the SHUTTLE button or the search dial so that the SHUTTLE button lights, then turn the search dial. Playback is carried out at a speed determined by the position of the search dial. The playback speed range is as follows:</p> <ul style="list-style-type: none"> • Using a Digital Betacam tape: -50 to +50 times normal speed • Using an MPEG IMX tape: -60 to +60 times normal speed • Using a Betacam SX tape: -60 to +60 times normal speed • Using an analog Betacam tape: -35 to +35 times normal speed for 525/60 mode or -42 to +42 times normal speed for 625/50 mode <p>The search dial has detents at the still position and at ± 5 times normal speed.</p> <p>The maximum shuttle mode playback speed can be changed by changing the setting of setup menu item 102 (see page 8-7).</p>
Jog	<p>Press the JOG button or the search dial so that the JOG button lights, then turn the search dial. Playback is carried out at a speed determined by the speed of rotation of the search dial. The playback speed range is -1 to +1 time normal speed.</p> <p>The search dial has no detents.</p>
Variable speed	<p>Press the VAR button, turning it on, then turn the search dial. You can control the playback speed finely (a maximum of 51 steps) in the range in which noiseless playback is possible.</p> <p>The search dial has detents at the still position and at the normal speed position.</p>
Capstan override	<p>For details on operation, see page 4-5.</p>

Setting setup menu item 101 (see page 8-7) to KEY enables you to use only the SHUTTLE, JOG, and VAR buttons to select shuttle/jog/variable speed modes.

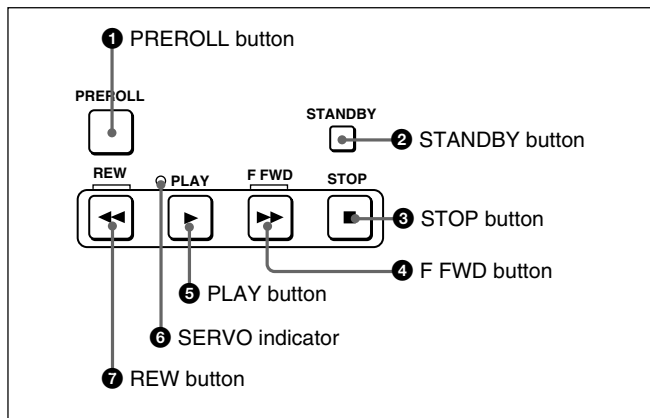
8 GOOD SHOT REC INHI (shot mark recording inhibit) indicator

This indicator is on or off according to the combination of the F5 (RECINH) setting on function menu page 4 and the record inhibit plug on the cassette, as shown in the following table. When this indicator is on, writing shot marks on tape is prohibited.

GOOD SHOT REC INHI indicator indications

RECINH setting	State of the record inhibit plug on the cassette	GOOD SHOT REC INHI indicator state
ON	Record inhibit/permit	Lit
OFF	Record inhibit	Lit
	Record permit	Off

9 Tape transport control section



1 PREROLL button

Press this button to cue up to the preroll point (before the IN point by the time set as the preroll time) on the tape. You can change or select the preroll time and the state of the unit at the end of preroll ("stop mode"¹⁾ or still playback mode) using setup menu item 001 or 401.

Cuing up to DMC playback control points

Hold down the STUNT IN, STUNT OUT, PLAY IN, or PLAY OUT button while pressing this button to cue up to the corresponding DMC playback control point.

2 STANDBY button

When a cassette is inserted and this button is off, to put the unit in standby mode, press the button, turning it on.

In standby mode, the drum is rotating and the tape is in contact with the drum. As a result, playback can start immediately.

To end standby mode, press the STANDBY button, turning it off.

If 8 minutes (value can be varied using setup menu item 501) elapse in standby mode, the unit automatically switches out of standby mode to protect the tape.

3 STOP button

To stop playback, press this button, turning it on.

When you stop playback, the unit switches to still playback.

Fault display function

The STOP button flashes when there is no external reference signal input or the input external reference signal is not synchronized to the input video signal.

4 F FWD (fast forward) button

To fast forward the tape, press this button, turning it on.

5 PLAY button

To start playback, press this button, turning it on.

To operate in capstan override mode

Hold down this button, and turn the search dial.

For details of capstan override mode, see page 4-5.

6 SERVO indicator

Lights when the drum servo and capstan servo are locked.

7 REW (rewind) button

To rewind the tape, press this button, turning it on.

1) Stop mode: The state in which the device currently the subject of operation is stopped, and the STOP button is lit.

2-1 Control Panels

10 ALARM indicator and KEY INHI indicator

ALARM indicator

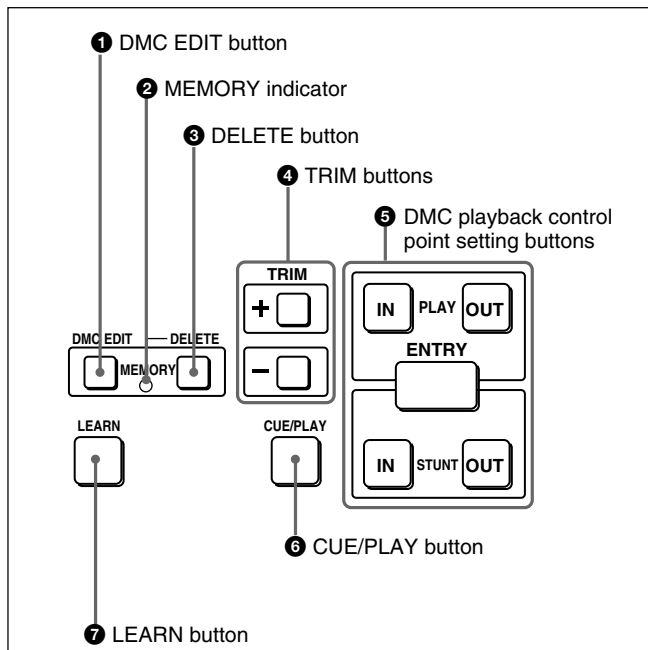
This lights when a hardware error is detected on the unit, and goes off when the error is resolved. When this indicator is lit, an error message appears in the time data/menu display section. If you are using the SDI OUTPUT 3 (SUPER) or COMPOSITE VIDEO OUTPUT 3 (SUPER) connector, then when the setting of F4 (CHARA) in function menu page 4 is ON, the error message also appears on the monitor screen.

For details on error messages, refer to Section 1-24 in the Maintenance Manual Volume 1.

KEY INHI (inhibit) indicator

This indicator lights when the KEY INHIBIT switch on the switch panel (see page 2-12) is set to ON.

11 DMC playback control section



1 DMC EDIT button

To carry out recording of playback at any speed between -1 and $+3$ times normal (between -1 and $+2$ times normal for Betacam SX), automatic playback, and automatic editing. For playback in feed mode, hold down this button and press the PLAY button. Playback in feed mode requires a setting of extended menu item 111.

2 MEMORY indicator

When memorizing the playback speed using the DMC EDIT button, this indicator flashes as the playback speed is captured to memory, and lights continuously once the speed is captured.

3 DELETE button

This deletes an existing DMC playback control point. Hold down this button and press the STUNT IN, STUNT OUT, PLAY IN, or PLAY OUT button which is lit, indicating an existing DMC playback control point, to delete the corresponding DMC playback control point. The button either goes off or flashes. When the button flashes, it is necessary to set the deleted DMC playback control point again. To cancel the DMC mode, hold down the DMC button and press the DELETE button.

4 TRIM buttons

Use these buttons to trim a DMC playback control point to single-frame precision. Hold down the STUNT IN, STUNT OUT, PLAY IN, or PLAY OUT button, and press one of these buttons. The '+' button advances the corresponding edit point by one frame, and the '-' button sets it back by one frame. Pressing one of these buttons while holding down the PLAY button adjusts the tape speed by $+8\%$ or -8% correspondingly. (Capstan override function)

5 DMC playback control point setting buttons

STUNT IN button and STUNT OUT button

To set a speed variation start or end point, hold down the STUNT IN button or STUNT OUT button, and press the ENTRY button. After you have made the setting, pressing the STUNT IN button or STUNT OUT button displays the speed variation start or end point set in time data display area 2.

PLAY IN button and PLAY OUT button

To set an on-air start or end point, hold down the PLAY IN button or PLAY OUT button, and press the ENTRY button. After you have made the setting, pressing the PLAY IN button or PLAY OUT button displays the on-air start or end point set in time data display area 2.

ENTRY button

Use this for setting DMC playback control points and so on.

- To set a speed variation start or end point: Hold down the STUNT IN button or STUNT OUT button, and press this button.
- To set an on-air start or end point: Hold down the PLAY IN button or PLAY OUT button, and press this button.

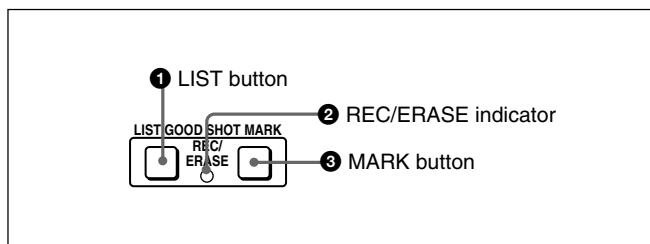
6 CUE/PLAY (cue up/playback) button

After setting an on-air start point (PLAY IN point) and an on-air end point (PLAY OUT point), pressing this button cues up the tape to the on-air start point. The button then starts flashing to indicate that the unit is ready for DMC playback operation. To start DMC playback, press the button again.

7 LEARN button

After setting a speed variation start point (STUNT IN point) and a speed variation end point (STUNT OUT point), pressing this button makes the tape start running. You can then use the search dial to vary the tape speed, which is automatically stored in memory. After thus storing the tape speed variation in memory, pressing this button starts an automatic playback between the speed variation start and end points at the stored speed.

12 Shot mark section



1 LIST button

Use this button to read in and list shot marks.

2 REC/ERASE indicator

This lights in the state in which writing, amending, and deleting of shot marks is enabled and flashes while a shot mark is actually being written, amended or deleted.

3 MARK button

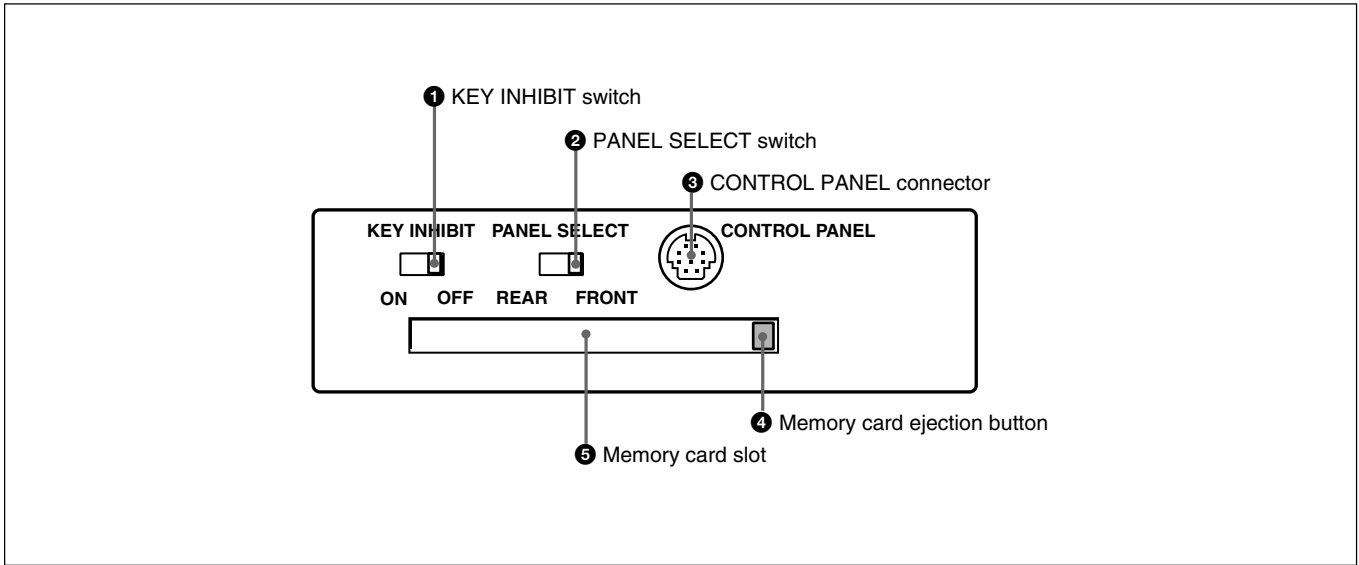
Hold this button down for 2 seconds or more, to enable writing, amending, and deleting of shot marks.

2-1 Control Panels

2-1-3 Switch Panel

To access the switch panel, open the lower control panel.

On how to open the lower control panel, see the figure on page 2-1.



① KEY INHIBIT switch

Moving this switch to the ON position disables the controls on the upper and lower control panels. You can specify which buttons and knobs are disabled in setup menu item 118.

② PANEL SELECT switch

In addition to the lower control panel, you can connect a similar control panel to this unit. When two control panels are connected to the unit, the PANEL SELECT switch is used to specify which panel be enabled to control the unit.

FRONT: Enables the control panel connected to the CONTROL PANEL connector on the switch panel.

REAR: Enables the control panel connected to the CONTROL PANEL connector on the connector panel. When setup menu item 117 is set to PARA, this switch position also enables the control panel connected to the CONTROL PANEL connector on the switch panel.

③ CONTROL PANEL connector (10-pin, round type)

Plug in the lower control panel connection cable.

④ Memory card ejection button

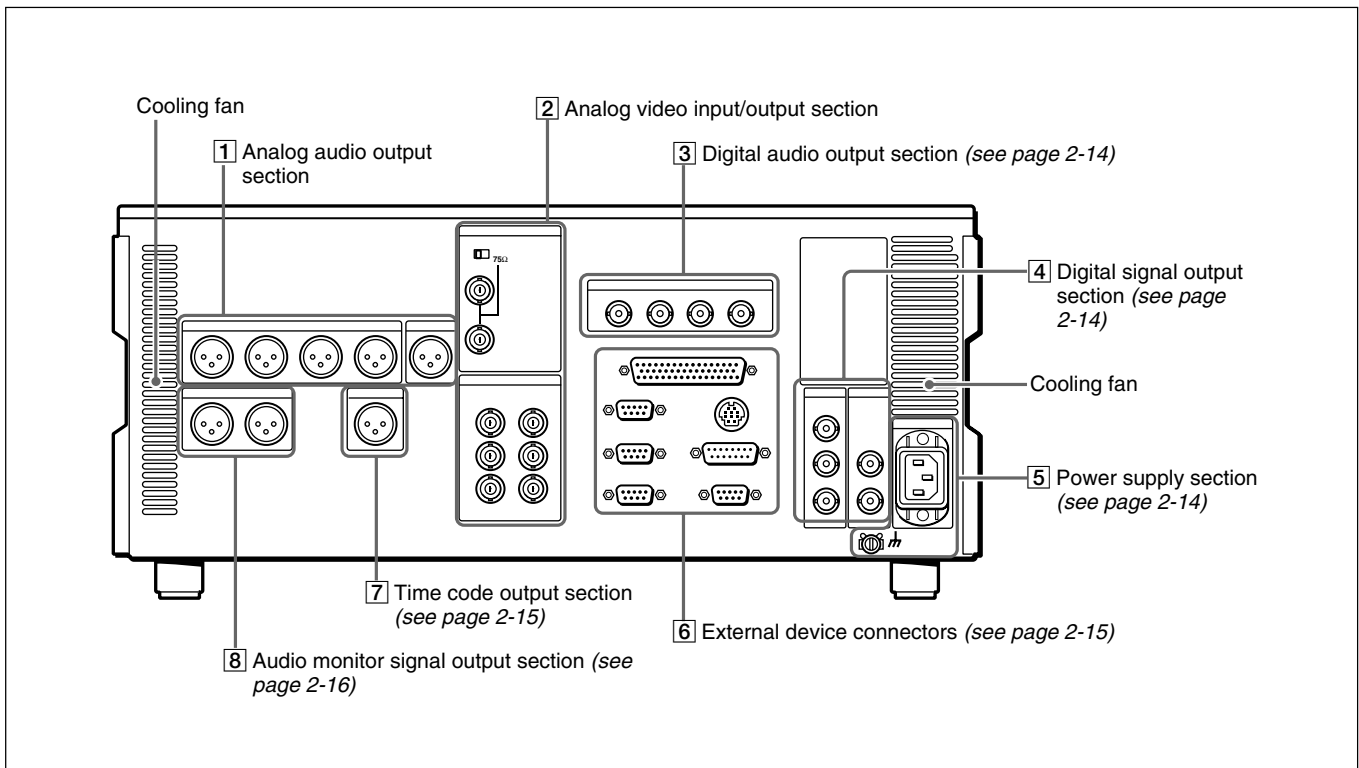
Press to eject a memory card from the memory card slot.

⑤ Memory card slot

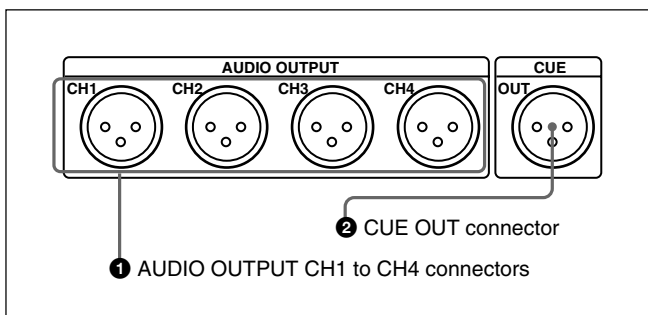
Insert a memory card to update this unit's firmware. You can save or load setup menu settings onto the memory card.

For details on firmware update, refer to the Maintenance Manual Volume 1.

2-2 Connector Panel



1 Analog audio output section



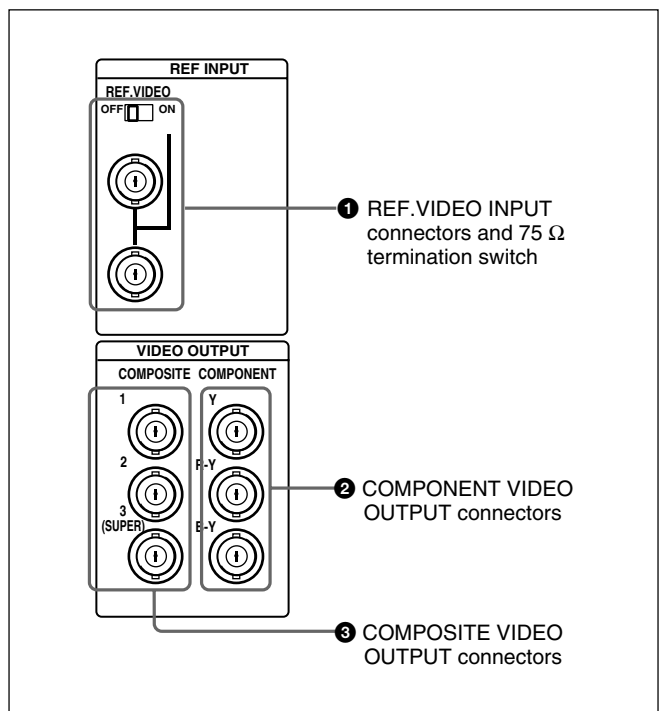
1 AUDIO OUTPUT CH1 to CH4 (channels 1 to 4) connectors (XLR 3-pin, male)

These connectors output analog audio signals for channels 1 to 4.

2 CUE OUT(cue audio output) connector (XLR 3-pin, male)

When playing back a digital Betacam tape, this connector outputs the cue audio signal.

2 Analog video input/output section



2-2 Connector Panel

1 REF. (reference) VIDEO INPUT connectors (BNC type) and 75 Ω termination switch

Input a reference video signal. Input a video signal with chroma burst (VBS) or a monochrome video signal (VS). When using the loop-through connection set the switch to the OFF position, and otherwise to the ON position.

2 COMPONENT VIDEO OUTPUT connectors (BNC type)

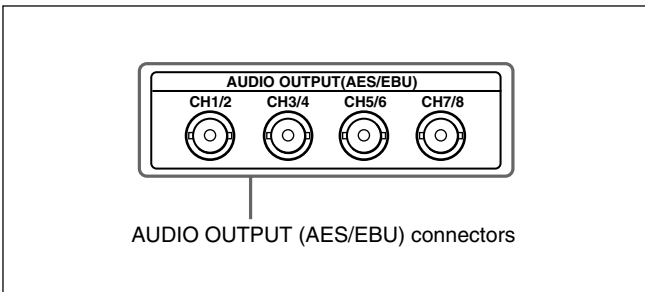
These connectors output analog component video signals (Y/R–Y/B–Y).

3 COMPOSITE VIDEO OUTPUT connectors (BNC type)

These connectors output analog composite video signals.

When the setting of F4 (CHARA) in function menu page 4 is ON, connector 3 (SUPER) outputs a signal with superimposed time code, menu settings, alarm messages, and other text information.

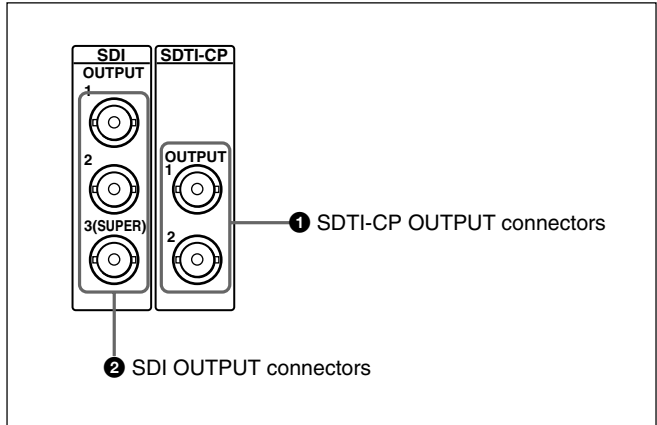
3 Digital audio output section



AUDIO OUTPUT (AES/EBU) connectors (BNC type)

These connectors output up to four sets (8 channels: channels 1/2, 3/4, 5/6 and 7/8) of AES/EBU format digital audio signals.

4 Digital signal output section



1 SDTI-CP (Serial Data Transport Interface) OUTPUT connectors (BNC type)

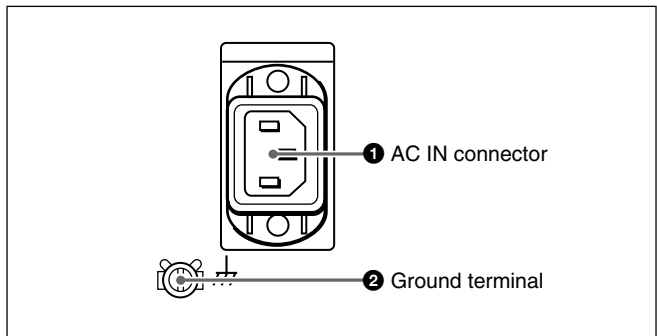
Output SDTI-CP format video and audio signals.

2 SDI (Serial Digital Interface) OUTPUT connectors (BNC type)

These connectors output D1 format digital video/audio signals.

When the setting of F4 (CHARA) in function menu page 4 is ON, connector 3 (SUPER) outputs a signal with superimposed time code, menu settings, alarm messages, and other text information.

5 Power supply section



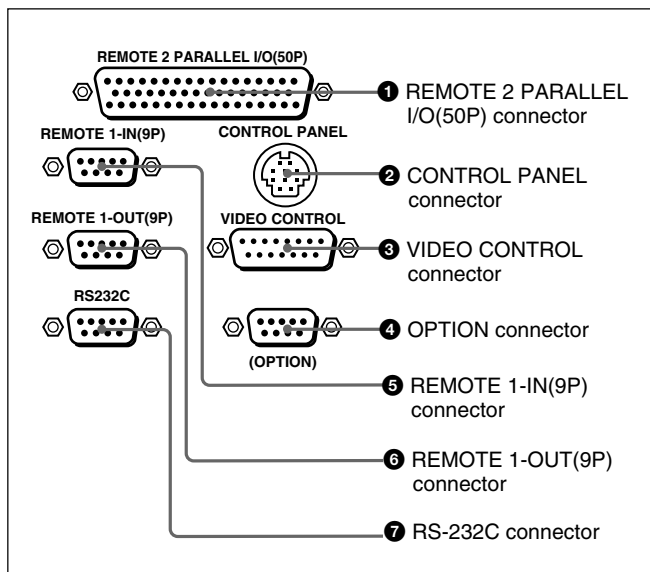
1 AC IN connector

Use the optional power cord to connect this to an AC outlet.

2 Ground terminal

Connect this to ground.

6 External device connectors



1 REMOTE 2 PARALLEL I/O(50P) connector (D-sub 50-pin)

Connect remote control signals from an external device.

For details, refer to the Installation Manual.

2 CONTROL PANEL connector (round type, 10-pin)

In addition to the lower control panel, a similar control panel can be connected to this unit. To connect such a second control panel, use this connector. When two control panels are connected, use the PANEL SELECT switch on the switch panel (*see page 2-12*) to specify which control panel will control this unit.

3 VIDEO CONTROL connector (D-sub 15-pin)

For remote control of the internal digital video processor, connect an optional BVR-50/50P Remote Control Unit.

Always power off this unit before connecting the remote control unit.

4 OPTION connector (D-sub 9-pin)

Not used.

5 REMOTE 1-IN(9P) connector (D-sub 9-pin)

When using this unit together with an MSW-A2000/A2000P/M2000/M2000P (recorder) or a D-1, D-2, or Betacam VTR, and a BVE-series BVE-900/910/2000/9000/9000P/9100/9100P or other editor, connect the optional 9-pin remote control cable from the other unit to this connector.

Depending on the setting of setup menu item 211, you can use this connector alone, or in a loop-through configuration with the REMOTE 1-OUT(9P) connector.

6 REMOTE 1-OUT(9P) connector (D-sub 9-pin)

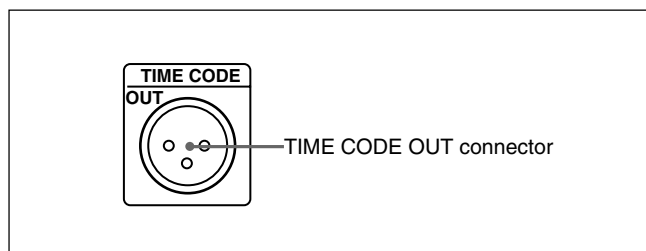
This provides the loop-through output for remote control signals from the REMOTE 1-IN(9P) connector.

Depending on the setting of setup menu item 211, you can use this connector alone, or in a loop-through configuration with the REMOTE 1-IN(9P) connector.

7 RS-232C connector (D-sub 9-pin)

Use this for monitoring and diagnosis of the state of this unit from an external computer, using ISR (Interactive Status Reporting).

7 Time code output section



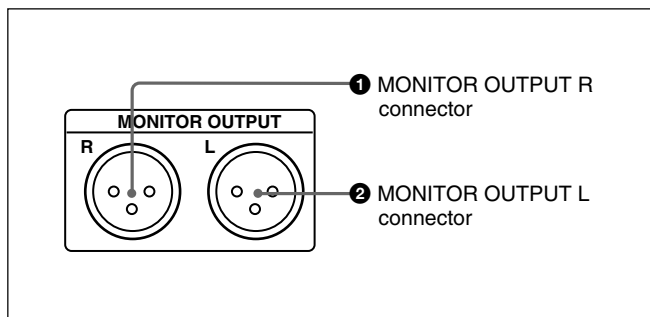
TIME CODE OUT connector (XLR 3-pin, male)

This outputs the playback time code.

By setting setup menu item 606, you can also output the time code from the internal time code generator locked to the playback time code.

2-2 Connector Panel

8 Audio monitor signal output section



1 MONITOR OUTPUT R connector (XLR 3-pin, male)

This outputs the audio signals whose output destination was set to 'R' with the audio signal selection buttons in the audio control section. If multiple tracks have been set to 'R', the signals of those tracks are mixed for output.

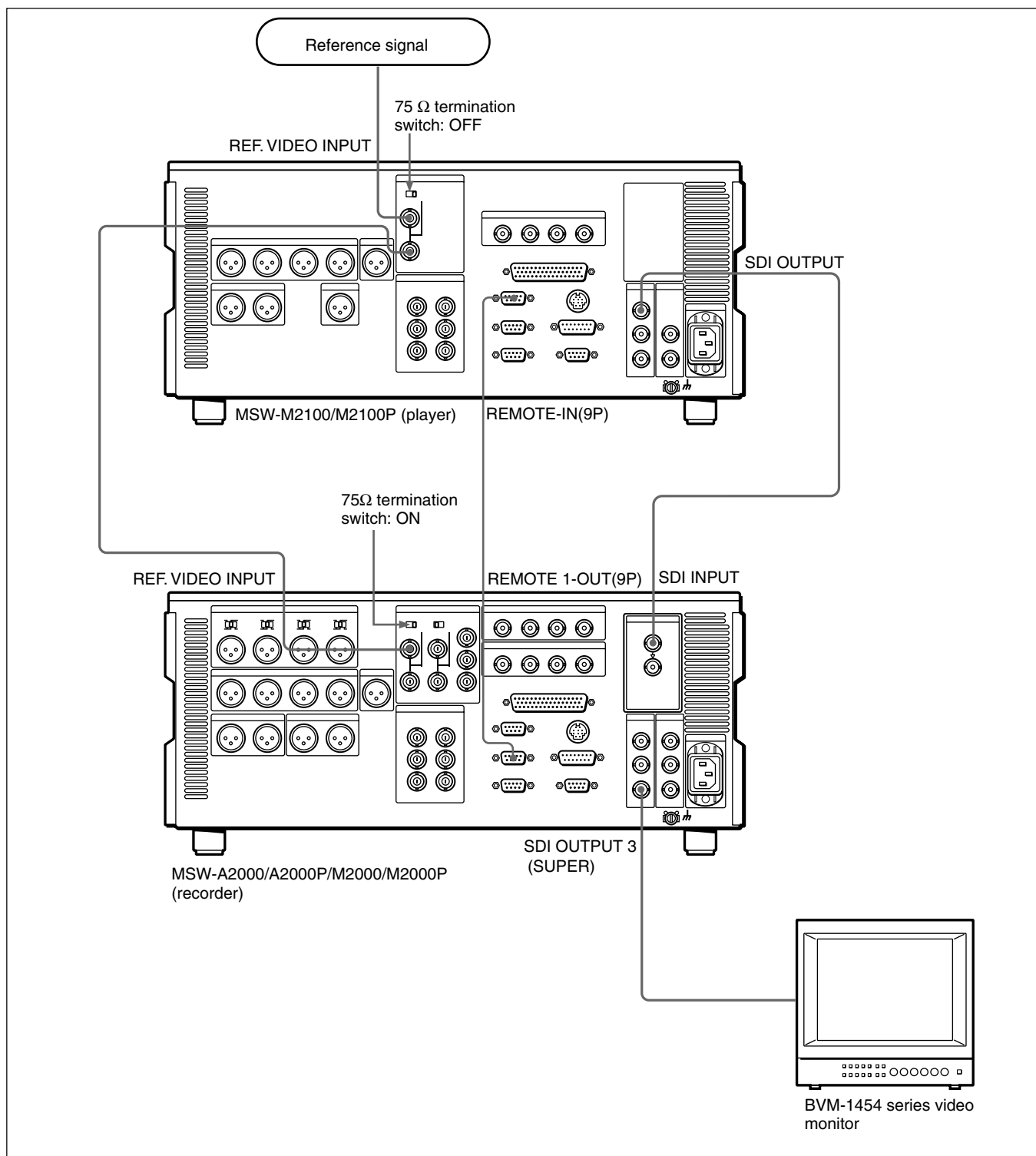
2 MONITOR OUTPUT L connector (XLR 3-pin, male)

This outputs the audio signals whose output destination was set to 'L' with the audio signal selection buttons in the audio control section. If multiple tracks have been set to 'L', the signals of those tracks are mixed for output.

3-1 Connections to External Devices

3-1-1 Connections to Digital Devices

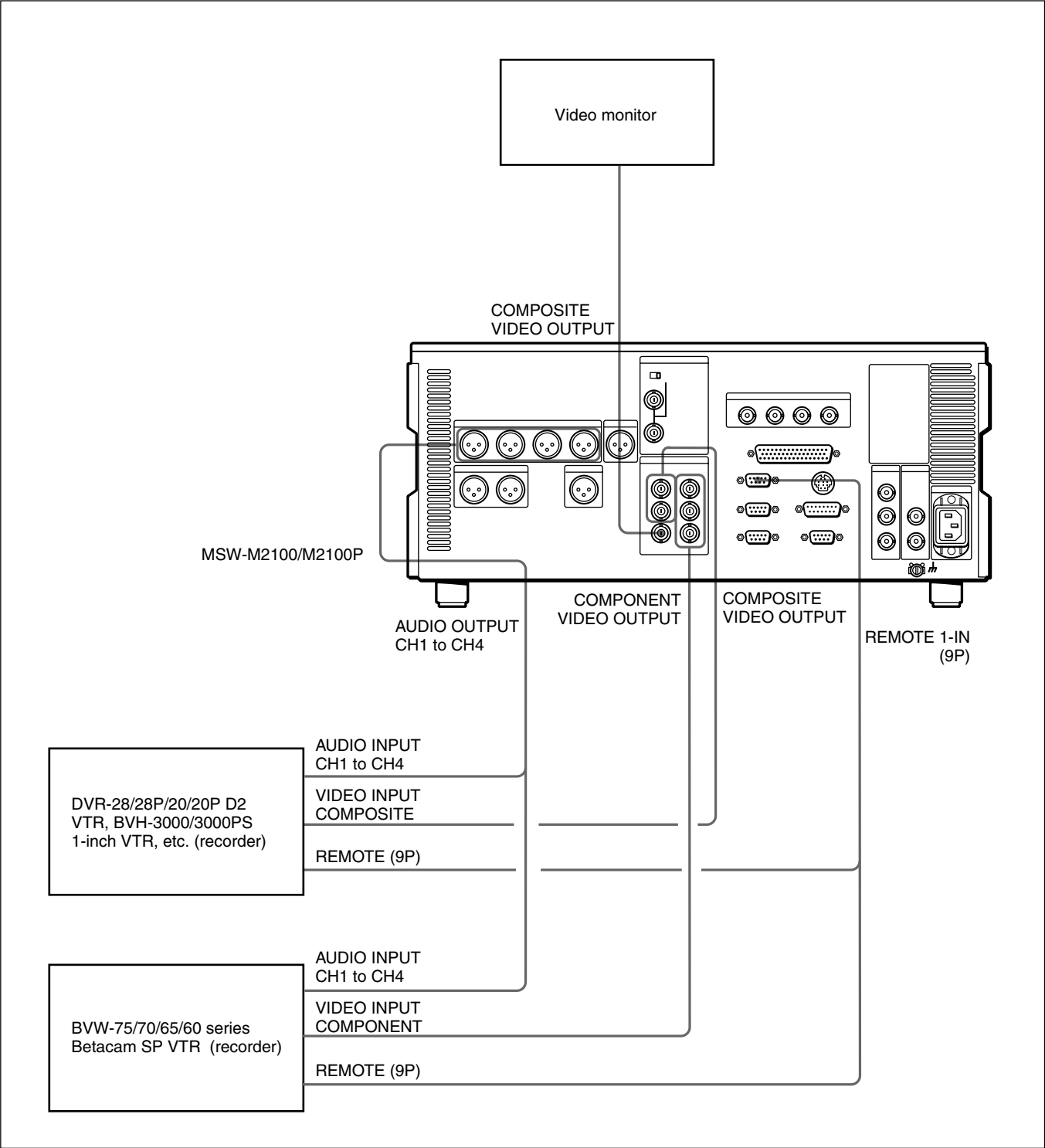
The following example shows the connections with an MSW-A2000/A2000P/M2000/M2000P unit as a recorder, with this unit used as a player.



3-1 Connections to External Devices

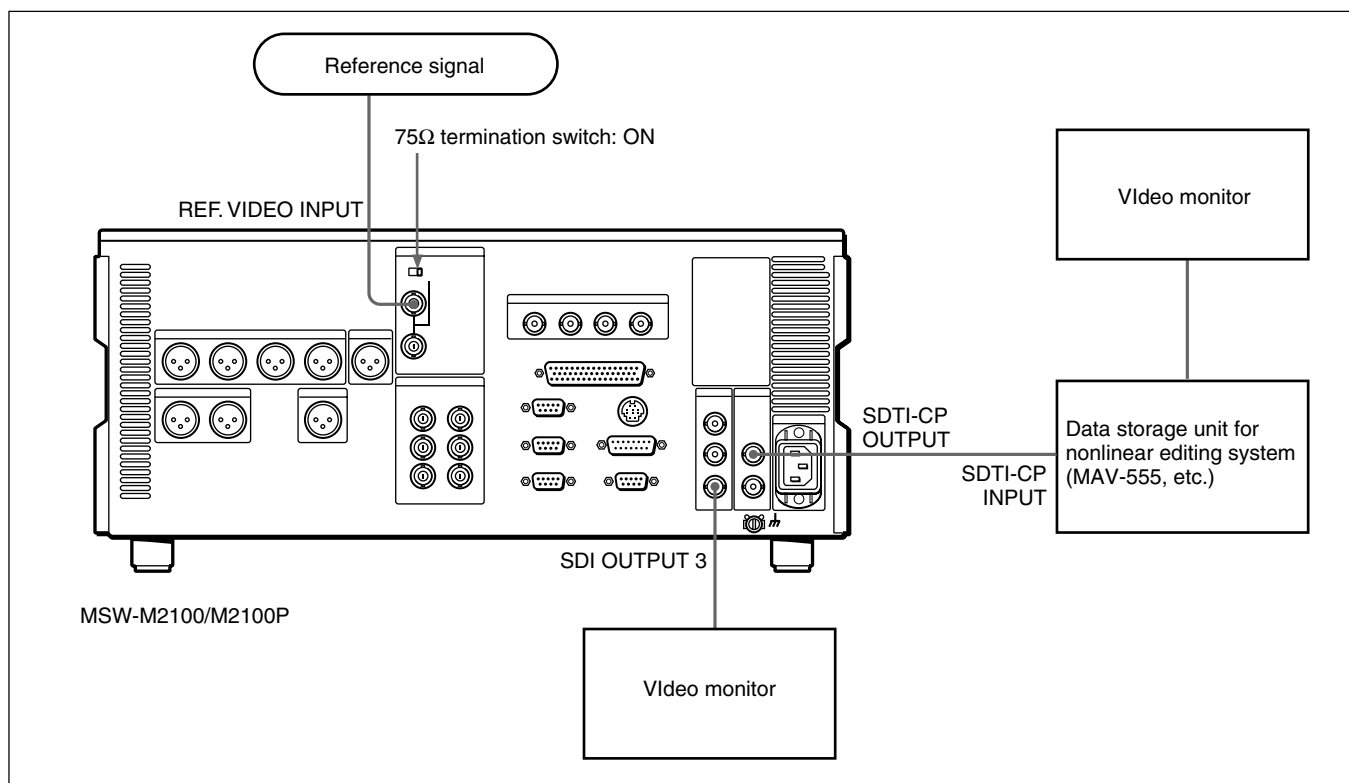
3-1-2 Connections to Analog Devices

The following example shows the connections with an analog VTR (a Betacam SP VTR, D2 VTR, 1-inch VTR, etc.) for recording analog audio and video signals played back on this unit.



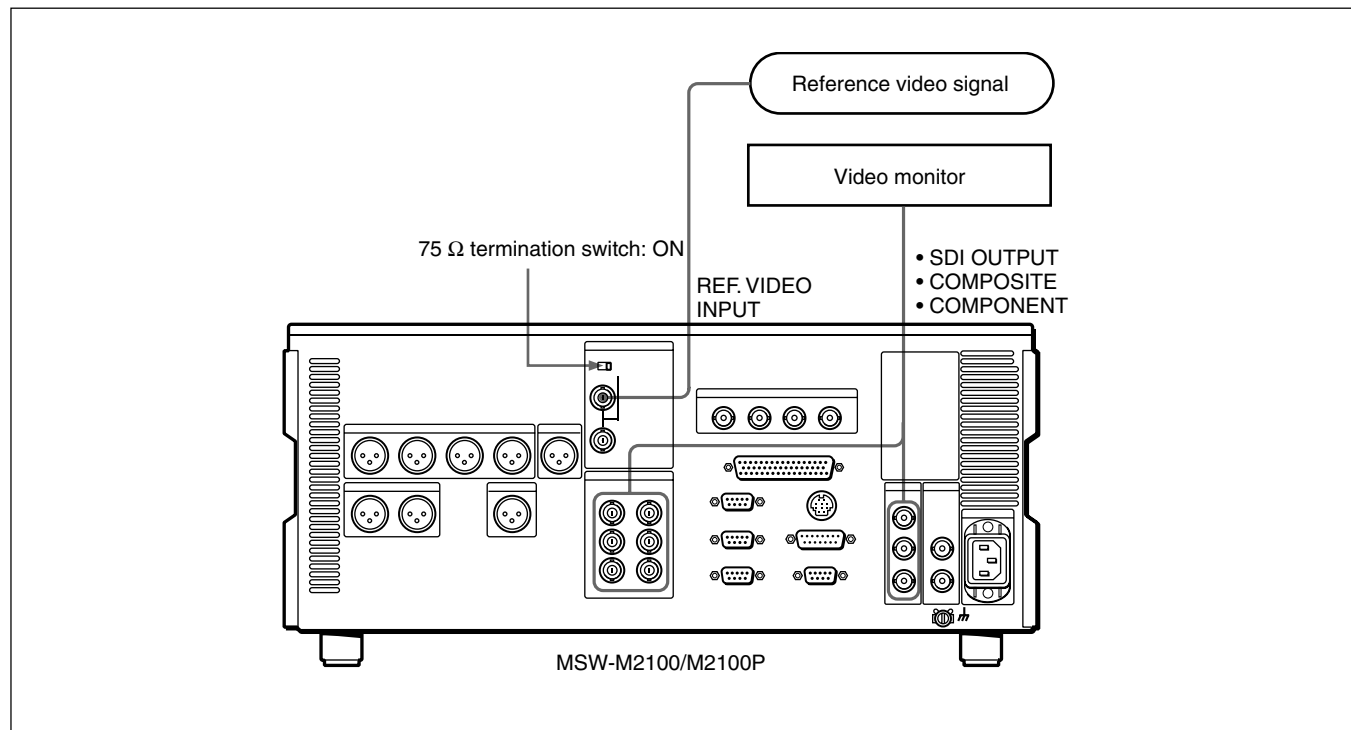
3-1-3 Connections Using the SDTI-CP Interface

The following example shows the connections with devices that support the SDTI-CP interface for dubbing video and audio signals.



3-2 Connecting a Reference Video Signal

Connect a reference video signal as shown below.



Reference signal for video output and servo system

The output from the internal reference video signal generator is supplied to the output video signal and servo circuits as a reference signal.

External sync signal for the internal reference video signal generator

The internal reference video signal generator is synchronized to an input reference video signal.

3-3 Setup

The principal setup operations before operating this unit can be carried out using setup menus.

The setup menus of this unit comprise a basic setup menu and an extended setup menu. The contents of these menus are as follows.

Basic setup menu:

- Items relating to the hours meter
- Items relating to operation
- Items relating to menu banks

Extended setup menu:

- Items relating to control panels
- Items relating to the remote control interface
- Items relating to editing operations
- Items relating to preroll
- Items relating to tape protection
- Items relating to the time code generator
- Items relating to video control
- Items relating to audio control
- Items relating to digital processing

For detailed information about the items, except for the basic setup menu items relating to the hours meter, of these menus and how to use them, see Chapter 8 “Setup Menus”. For detailed information about menu operations relating to the hours meter, see Section 9-5-1 “Digital Hours Meter”(page 9-5).

This unit allows menu settings to be saved in what are termed “menu banks.” Saved sets of menu settings can be recalled for use as required.

For more information about the menu banks, see the section “Menu bank operations (menu items B01 to B13)” (page 8-4).

3-4 Superimposed Character Information

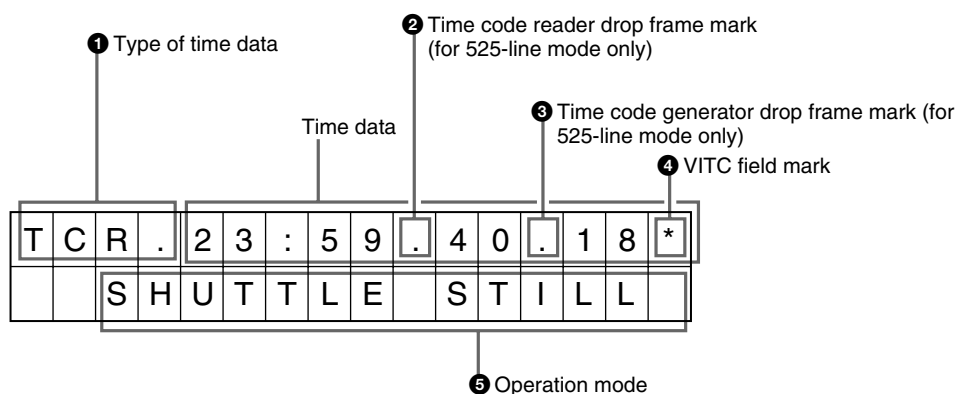
When F4 (CHARA) in function menu page 4 is set to ON, the video signal output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or the SDI OUTPUT 3 (SUPER) connector contains superimposed character information, including time code, menu settings, and alarm messages.

Adjusting the character display

You can adjust the position, size and type of the superimposed characters using setup menu items 002, 003, 005, 009, and 011.

For details, see Section 8-3 “Items in the Basic Setup Menu” (page 8-5).

Information displayed



Note

The display shown above corresponds to the factory default settings of the unit. Changing the setting of setup menu item 005 allows different time data to be displayed in the lower line of the display.

For details, see Section 8-3 “Items in the Basic Setup Menu” (page 8-5).

1 Type of time data

Display	Meaning
CTL	CTL counter data
TCR	LTC reader time code
UBR	LTC reader user's bits
TCR.	VITC reader time code
UBR.	VITC reader user's bits
IN	IN point
OUT	OUT point
AI	Audio IN point
AO	Audio OUT point
DUR	Duration between any two of the four edit points (IN, OUT, audio IN, audio OUT)

Note

If the time data or user's bits cannot be read correctly, they will be displayed with an asterisk. For example, “T*R”, “U*R”, “T*R.” or “U*R.”.

② Time code reader drop frame mark (for 525-line mode only)

“.”: Indicates drop frame mode

“:”: Indicates non-drop-frame mode

③ Time code generator drop frame mark (for 525-line mode only)

“.”: Indicates drop frame mode (factory preset)

“:”: Indicates non-drop-frame mode

④ VITC field mark

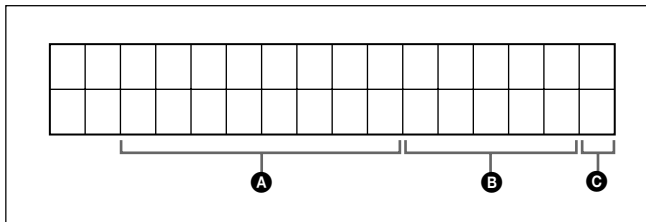
“ ” (blank): Fields 1 and 3 (for 525/60 mode) or fields 1, 3, 5 and 7 (for 625/50 mode)

“ * ”: Fields 2 and 4 (for 525/60 mode) or fields 2, 4, 6 and 8 (for 625/50 mode)

⑤ Operation mode

The field is divided into three blocks, A, B and C.

- Block A displays the operation mode.
- Block B displays the servo lock status or tape speed.
- Block C displays a ■ mark to indicate an edit section during automatic editing, or the section between the IN and OUT points in auto feed playback.



Display		Operation mode
Block A	Block B	
SPD	(speed)	Feed playback speed setting (+1.00 or +2.00 (BKMW-105 installed))
FEED	(speed)	During feed playback (speed display same as during setting)
A-FEED		During auto feed playback, or cue up
A-FEED	(speed)	During auto feed playback, or feed playback (speed display same as during setting)
TAPE UNTHREAD		Cassette is not loaded.
STANDBY OFF		Standby off mode
T.RELEASE		Tape tension released
STOP		Stop mode
F.FWD		Fast forward mode
REW		Rewind mode
PREROLL		Preroll mode
PLAY		Playback mode (servo unlocked)
PLAY	LOCK	Playback mode (servo locked)
PLAY	Variation from normal speed (%)	Capstan override mode (see page 4-5)
JOG	STILL	A still picture in jog mode
JOG	FWD	Jog mode in forward direction
JOG	REV	Jog mode in reverse direction
SHUTTLE	(Speed)	Shuttle mode
VAR	(Speed)	Variable speed mode
DMC	(Speed) ^{a)}	DMC playback mode
DMC-SPD	(Speed)	DMC initial speed setting
PLY-SPD	Variation from normal speed	Tape speed override mode (when "TSO" is selected in setup menu item 111)

a) Initial speed settings or stored speed settings

3-5 Cassettes

3-5-1 Cassette Types

This unit uses the following MPEG IMX cassettes for playback.

MPEG IMX cassettes

Small cassettes	BCT-6MX/12MX/22MX/32MX/60MX
Large cassettes	BCT-64MXL/94MXL/124MXL/184MXL

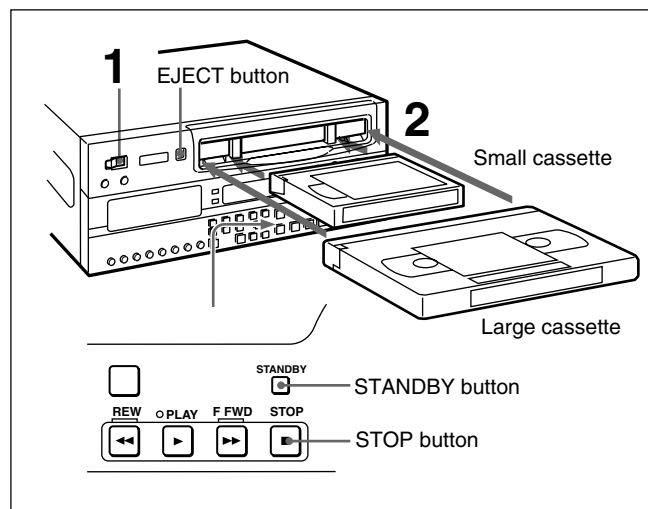
The following tapes can also be used for playback.

- Digital Betacam cassettes
- Betacam SX cassettes
- Betacam SP cassettes (metal tape)
- Betacam cassettes (oxide tape)

3-5-2 Inserting and Ejecting Cassettes

It is not possible to insert or eject a cassette unless the unit is powered on.

Inserting a cassette



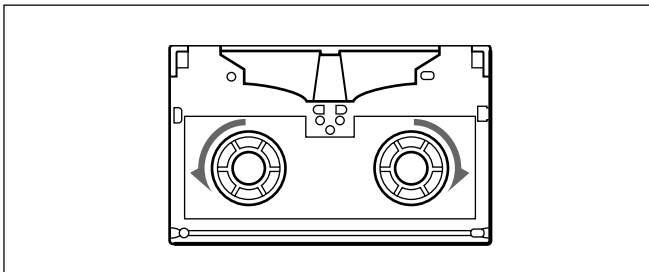
- 1 Turn the POWER switch on.
- 2 Check the following points, then insert the cassette in the orientation shown in the figure.
 - Check that message “ERR-10” is not shown in the time data/menu display section.
 - Check that there is no slack in the tape.

The cassette is drawn into the unit, and the STANDBY and STOP buttons light.

If message “ERR-10” appears in the time data/menu display section, there is moisture condensation in the unit.

Removing slack from the tape

Press in one of the reels with a finger, and turn gently in the direction shown by the arrows until there is no slack in the tape.



Ejecting a cassette

Press the EJECT button.

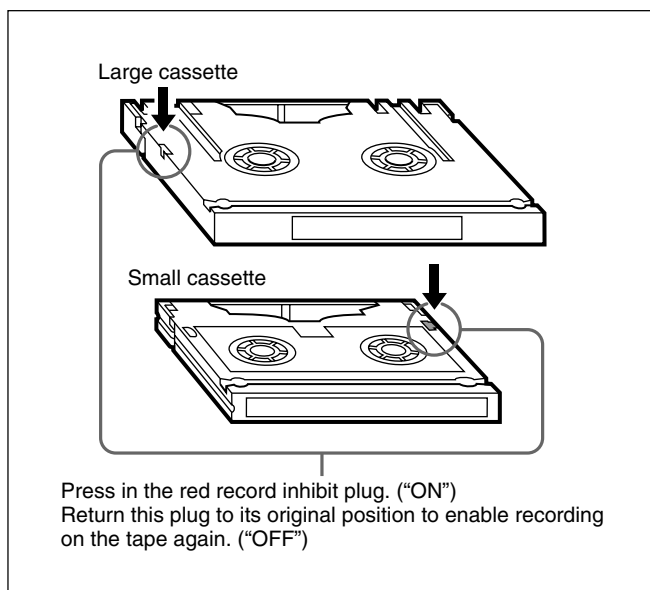
Note

Ejecting is a local operation. It is not possible to eject a cassette in another unit by remote control.

If the tape slacks inside the unit, pressing the EJECT button may not eject the cassette. For information about how to remove the cassette in such a case, refer to Section 1-17 in the Installation Manual.

3-5-3 Preventing Accidental Erasure of Recordings

To prevent a tape from being inadvertently erased, press in the red record inhibit plug on the cassette.



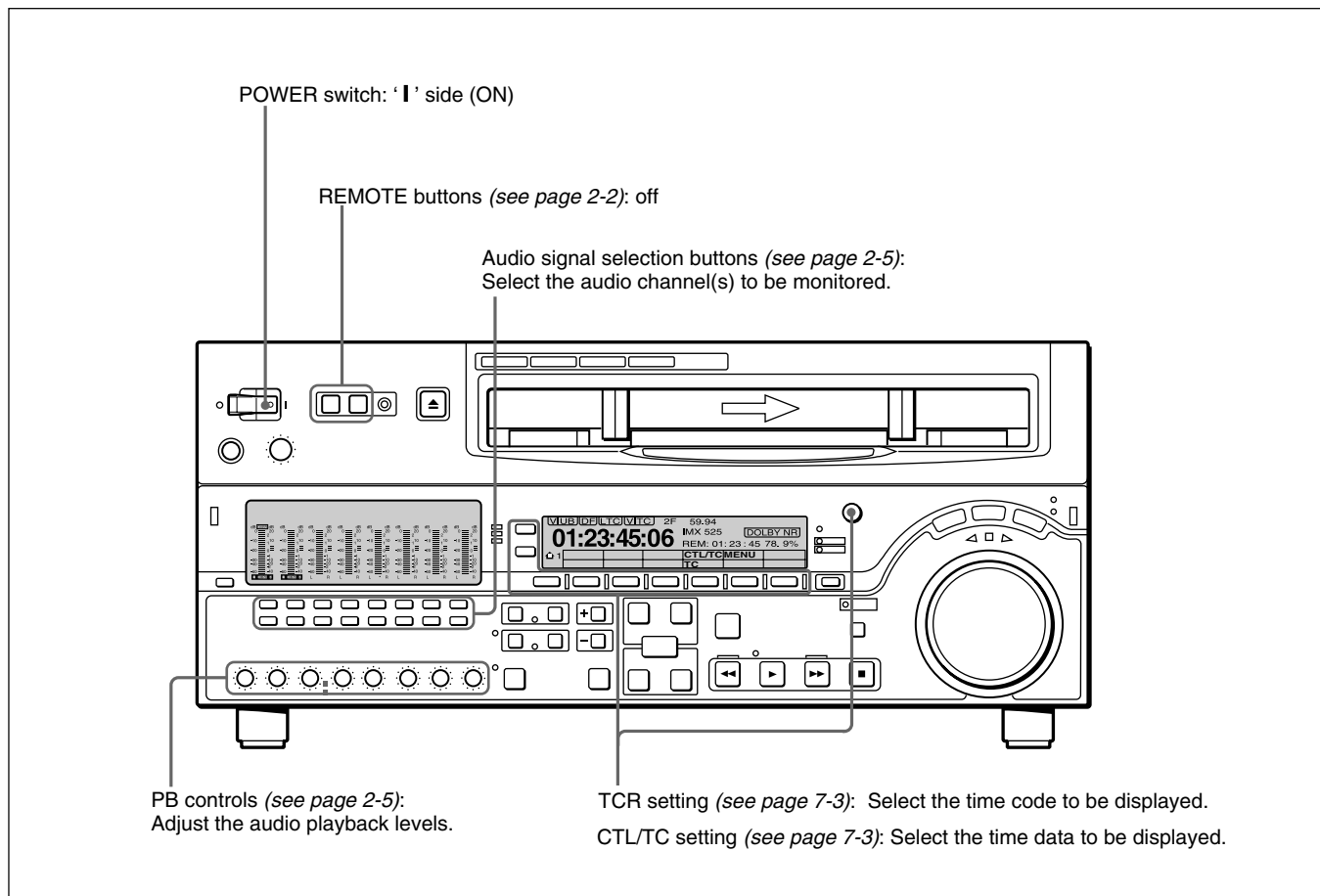
4-1 Preparations for Playback

This section describes preparations for video and audio playback.

4-1-1 Switch and Menu Settings

Before beginning playback, make necessary switch and menu settings.

For details on each setting, see the pages indicated in parenthesis.



4-1 Preparations for Playback

4-1-2 Time Data Selection

Displayed time data

Use the CTL/TC setting in function menu HOME page to select one of CTL (control), time code, and user bit values. When you select time code, the data displayed is determined by the TCR setting (LTC/AUTO/VITC) in function menu page 1 as follows.

TCR setting	Displayed data
LTC	LTC recorded on tape
AUTO	LTC or VITC (automatically switched)
VITC	VITC recorded on tape

Output time code

The setting of setup menu item 606 determines whether the time code output from the TIME CODE OUT connector is the time code generated by the internal time code generator (REGEN), or the playback time code (TAPE).

4-1-3 Playback With SDTI-CP Output

Irrespective of tape format, video and audio signals can be played back only at normal playback speed.

4-2 Playback Procedures

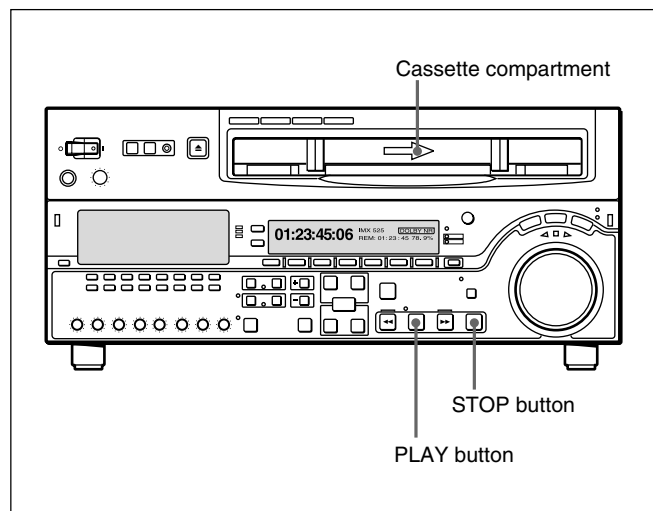
This section describes the following types of playback which the unit can carry out:

- Normal playback
Playback at normal ($\times 1$) speed
- Playback in jog mode
Variable speed playback, with the speed determined by the speed of turning the search dial
- Playback in shuttle mode
Variable speed playback, with the speed determined by the angular position of the search dial
- Playback in variable speed mode
Variable speed playback, with the speed finely determined by the angular position of the search dial
- Playback using the capstan override function
The playback speed is adjusted temporarily according to the angular position of the search dial, to align the playback phase with that of another VTR.
- DMC Playback
Playback carried out at memorized varying speed.

4-2-1 Normal Playback

First insert a cassette.

For details of how to insert a cassette, see Section 3-5-2 "Inserting and Ejecting Cassettes" (page 3-8).



To start playback

Press the PLAY button.

Playback starts, the servo locks, and the SERVO indicator lights.

To stop playback

Press the STOP button.

If you play back to the end of the tape

The tape is automatically rewound, and stops.

It is possible to disable the automatic rewind function by changing the setting of setup menu item 125.

When using the Dolby noise reduction system

When using an analog Betacam cassette, you can use Dolby C noise reduction for audio playback.

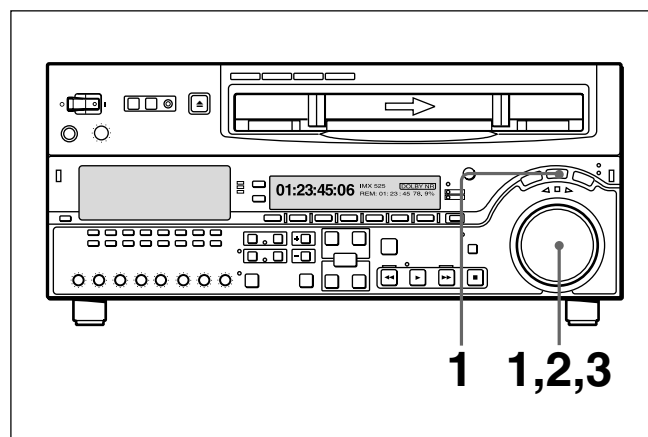
To activate the Dolby noise reduction system, set the DOLBY of function menu page 4 to NR ON (see page 7-6).

4-2-2 Playback in Jog Mode

In jog mode, you can control the speed of playback by the speed of turning the search dial. The playback speed range is ± 1 times normal speed.

The playback speed range can be ± 3 times normal speed by changing the setting of setup menu item 116.

To carry out playback in jog mode, use the following procedure.



- 1 Press the JOG button or search dial so that the JOG button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

- 2 Turn the search dial in the desired direction, at the speed corresponding to the desired playback speed.

Playback in jog mode starts.

(Continued)

4-2 Playback Procedures

- 3** To stop playback in jog mode, stop turning the search dial.

The function to toggle between jog mode and shuttle mode each time the search dial is pressed can be disabled by changing the setting of setup menu item 101.

The function to toggle between jog mode and shuttle mode each time the search dial is pressed can be disabled by changing the setting of setup menu item 101.

To return to normal-speed playback

Press the PLAY button.

To alternate between normal-speed playback and shuttle mode playback

Set the search dial to the position corresponding to the desired shuttle playback speed, then switch between normal-speed playback and shuttle playback by pressing the PLAY and SHUTTLE buttons alternately. For intermittent shuttle mode playback, press the STOP and SHUTTLE buttons alternately.

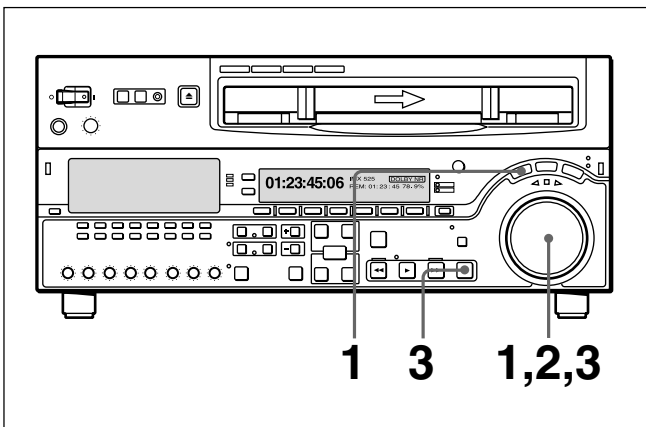
4-2-3 Playback in Shuttle Mode

In shuttle mode, you can control the speed of playback by the angular position of the search dial. The range of playback speed is as follows:

- Using a Digital Betacam tape: ± 50 times
- Using an MPEG IMX tape: ± 60 times
- Using a Betacam SX tape: ± 60 times
- Using an analog Betacam tape: ± 35 times (for 525/60 mode) or ± 42 times (for 625/50 mode)

There are detents on the search dial at the still position and at ± 5 times normal speed.

To carry out playback in shuttle mode, use the following procedure.



- 1** Press the SHUTTLE button or search dial so that the SHUTTLE button is lit.

Pressing the search dial toggles between jog mode and shuttle mode.

- 2** Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in shuttle mode starts.

- 3** To stop playback in shuttle mode, return the search dial to the center position, or press the STOP button.

4-2-4 Playback in Variable Speed Mode

In variable speed mode, you can finely control (51 steps) the playback speed in the following speed ranges depending on the tape format.

Digital Betacam: -1 to $+3$ times normal speed

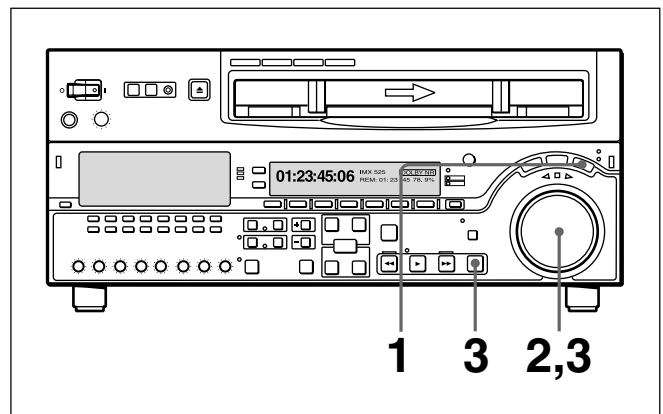
MPEG IMX: -1 to $+3$ times normal speed

Betacam SX: -1 to $+2$ times normal speed

Betacam/Betacam SP: -1 to $+3$ times normal speed

There are detents on the search dial at the still position and at ± 1 times normal speed.

To carry out playback in variable speed mode, use the following procedure.



- 1** Press the VAR button, turning it on.

- 2 Turn the search dial to the desired angle corresponding to the desired playback speed.

Playback in variable speed mode starts.

- 3 To stop playback in variable speed mode, return the search dial to the center position, or press the STOP button.

To return to normal-speed playback

Press the PLAY button.

To alternate between normal-speed playback and variable speed mode playback

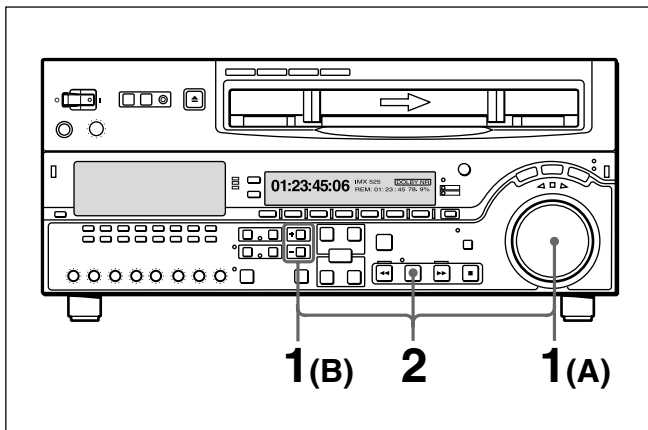
Set the search dial to the position corresponding to the desired variable playback speed, then switch between normal-speed playback and variable speed playback by pressing the PLAY and VAR buttons alternately. For intermittent variable speed mode playback, press the STOP and VAR buttons alternately.

4-2-5 Playback Using the Capstan Override Function

You can use the capstan override function to adjust the playback speed temporarily. This function is convenient for playback phase synchronization with another VTR playing back the same program.

Two types of playback operation are available using the capstan override function (capstan override playback).

To perform temporal capstan override playback



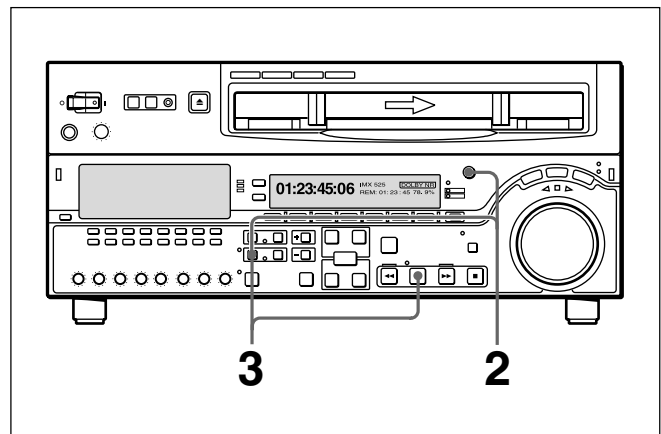
- 1 (A) Hold down the PLAY button, and turn the search dial in the desired direction to adjust the playback speed.
The range of speed adjustment is $\pm 15\%$ in steps of 1%.
(B) Hold down the PLAY button, and press the TRIM buttons to adjust the playback speed. The playback speed can be adjusted to $\pm 8\%$ only.

The SERVO indicator goes off.

- 2 When the adjustment is completed, release the PLAY button.

The tape transport returns to normal speed, and the SERVO indicator comes on again.

To perform continuous capstan override playback



- 1 Set setup menu item 111 (TSO PLAY) to TSO.
- 2 Hold down the DMC EDIT button and turn the MULTI CONTROL knob to select the playback speed.

The selected playback speed is displayed in time data display area 2 on the lower control panel of this unit as well as in the character information display on the monitor screen.

- 3 Press the PLAY button while holding down the DMC EDIT button.

(Continued)

4-2 Playback Procedures

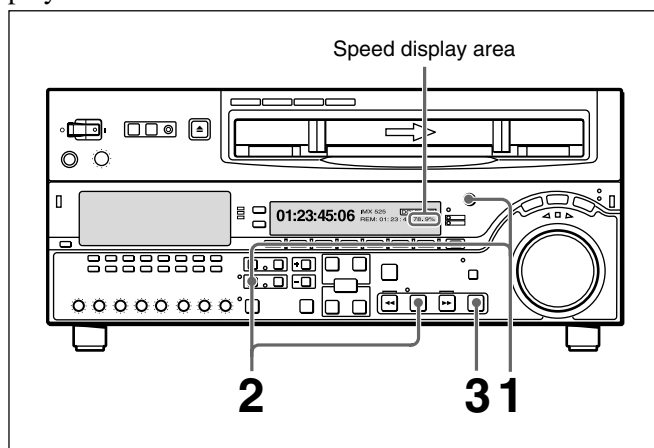
- 4 Press the PLAY button or perform any other operation to exit the tape speed override mode.

See Section 8-2 “Setup Menu Operations” (page 8-2) for details of setup menu operations.

For details of character information displayed on the video monitor screen, see the descriptions of F4 (CHARA) in function menu page 4 (page 7-6) and setup menu item 005 (page 8-5).

Carrying out playback in feed mode

Use the following procedure to carry out feed mode playback.



- 1 Hold down the DMC EDIT button, and turn the search dial to set the playback speed.

When BKMW-105 option is installed

In MPEG IMX playback, you can set the feed mode playback speed to 1 or 2 times normal speed by rotating the MULTI CONTROL knob with the DMC EDIT/FEED button held down. If the option is not installed, feed mode playback speed is 1 times normal speed.

- 2 Hold down the DMC EDIT button, and press the PLAY button.

Both buttons light, and playback in feed mode starts.

- 3 Where you wish to stop playback, press the STOP button.

Playback stops.

Auto feed playback

Auto feed playback is a function for feed mode playback of the segment between a specified IN point and OUT point.

By connecting this unit to a recorder VTR with a RECEIVE STANDBY function (MAV-555/2000 etc.) via the SDTI-CONTROL PANEL interface and executing auto feed playback on this unit, you can record the interval between the IN and OUT points on the recorder.

- 1 On the HOME page of the function menu, set F4 (CTL/TC) to TC.
- 2 Start playback and, with the ENTRY button held down, press the STUNT IN button at the point where you want to set the IN point. To set the OUT point, press the STUNT OUT button with the ENTRY button held down.
- 3 With the DMC EDIT button held down, press LEARN button. (Before starting, refer to step 1 of the previous section “Carrying out playback in feed mode” and set the feed mode playback speed.)

The VTR prerolls to a point 5 seconds before the IN point (this can be changed with item 001 of the basic menu) and starts auto feed playback. Playback stops after postroll for 2 seconds beyond the OUT point.

The segment between the IN and OUT points is recorded on the recorder.

4-3 Dynamic Motion Control (DMC) Playback

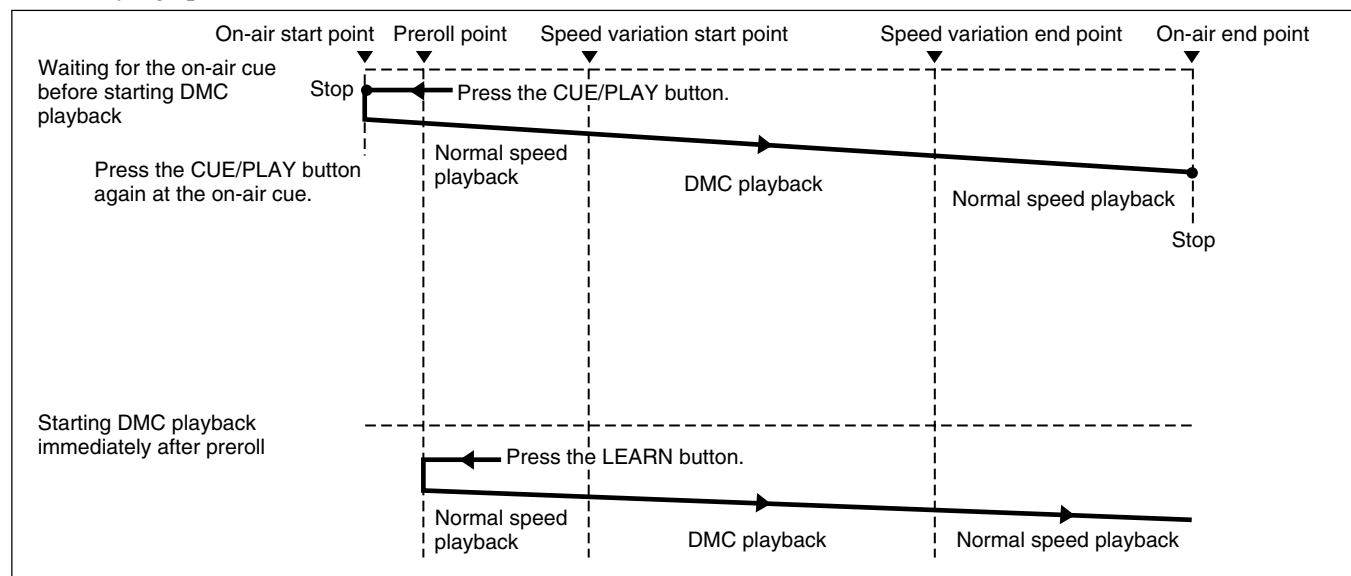
This section describes dynamic motion control (DMC) playback.

4-3-1 Overview

DMC playback allows you to vary the playback speed for a certain section of a tape, in variable speed mode (from -1 to $+3$ times normal speed for digital Betacam playback, from -1 to $+3$ times normal speed for MPEG IMX playback, from -1 to $+2$ times normal speed for Betacam SX playback, or from -1 to $+3$ times normal speed for analog Betacam playback), and store the varying speed in memory for later playback at the same varying speed.

For example, during a live broadcast of a sporting event you can set the start and end points of highlights and then provide immediate DMC playback of those highlights.

During DMC playback the tape moves as shown in the following figure.

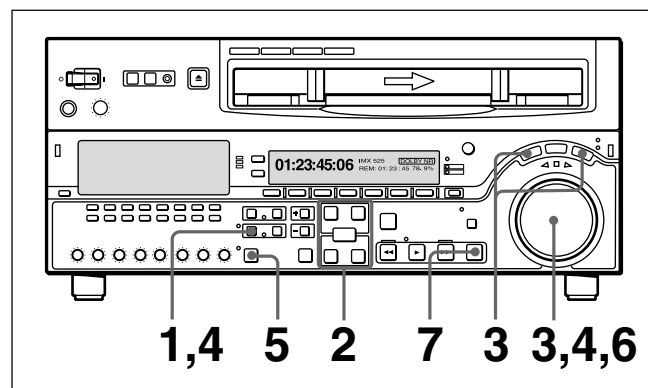


4-3-2 Storing a Varying Playback Speed in Memory

To store the playback speed for DMC playback, use the following procedure.

Note

Make sure that the TSO PLAY of setup menu item 111 is set to DIS beforehand.



1 Press the DMC EDIT button, turning it on.

(Continued)

4-3 Dynamic Motion Control (DMC) Playback

- 2** Either while playing back the recorded tape, press the ENTRY button and one of the following buttons simultaneously, to set the start and end points.

- On-air start point: PLAY IN button
- Speed variation start point: STUNT IN button
- Speed variation end point: STUNT OUT button
- On-air end point: PLAY OUT button

Each press turns the corresponding button on.

- 3** Press the search dial or the SHUTTLE button or VAR button to enter shuttle/variable speed mode.

The SHUTTLE/VAR indicator lights.

- 4** Holding down the DMC EDIT button, turn the search dial, to set the initial speed at the playback start point.

The speed you set appears in the speed indication area. During this period the tape does not move. When the initial speed setting is complete, release the DMC EDIT button.

- 5** Press the LEARN button.

The tape is prerolled and played back at normal speed from the on-air start point to the speed variation start point. On passing the speed variation start point, the MEMORY indicator begins to flash, and playback begins at the speed set in step 4.

- 6** Turn the search dial to vary the playback speed.

While the MEMORY indicator is flashing, the speed variations are stored in memory. On passing the speed variation end point, the MEMORY indicator changes from flashing to continuously lit, and the variable speed storing ends.

- 7** Press the STOP button to stop the tape.

If the MEMORY indicator lights continuously before the speed variation end point

This indicates that the memory became full at that point. It is therefore not possible to record more speed variation. The maximum capacity is a duration of 120 seconds.

To amend the stored speed variation

Press the LEARN button.

The interval between the speed variation start and end points is automatically played back at the stored speed. Operate the search dial as required, to adjust the playback speed.

Setting the initial speed to normal speed

In step 4, press the PLAY button.

4-3-3 Executing DMC Playback

There are two methods of starting DMC playback.

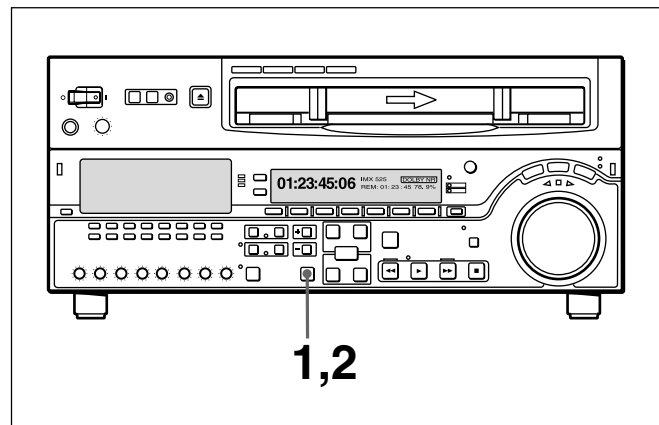
- Starting playback at the on-air cue from the on-air start point
- Starting playback immediately after preroll

Note

To avoid operating mistakes we recommend that you use the VTR in standalone mode when carrying out DMC playback.

To start playback at the on-air cue from the on-air start point

Use the following procedure.



- 1** Press the CUE/PLAY button.

The CUE/PLAY button lights, and the tape is cued up to the on-air start point. After the tape is cued up, the CUE/PLAY button flashes.

-
- 2** At the moment the on-air cue is given, press the CUE/PLAY button once more.

The CUE/PLAY button lights, and playback starts at standard speed.

Between the speed variation start and end points, DMC playback is carried out at the stored speed, and then playback continues at normal speed and the tape stops at the on-air end point.

To start playback immediately after preroll

Press the LEARN button.

The LEARN button lights, and after preroll, DMC playback is carried out for the section from the speed variation start point, then playback continues at normal speed from the speed variation end point.

To stop the tape during DMC playback

Press the STOP button.

To exit DMC playback mode

Press the DMC EDIT button and the DELETE button simultaneously.

5-1 Overview

This unit can record shot marks or use shot marks recorded in MPEG IMX or Betacam SX format.

Shot marks are indications at desired points on a tape which enable faster cuing.

Types of shot mark

This unit supports the following three types of shot mark. This chapter describes recording start marks and

post marks, treating them as varieties of shot marks.

Shot mark type	Writing on a camcorder, etc.	Writing on this unit	Modifying and erasing on this unit
Recording start mark	Automatically written at the start of recording.	—	Possible (erasure only)
Shot mark 1 and shot mark 2	Written by a manual shot mark operation during recording or editing.	—	
Post mark	Not written (Written only on this unit)	Written by a button operation during playback, while stopped, or during a search.	Possible

First, the shot mark functions of this unit are described in simple terms.

Reading shot marks

This unit reads in shot marks written on a tape and stores them in memory. (To a maximum of 200)
Once this data is stored in this unit, it is preserved even when the power is turned off.

Writing and erasing shot marks

On this unit, whereas you can erase any types of shot marks, it is not possible to write any shot marks other than post marks.

Shot mark list operations

On the monitor, you can display a list of the shot marks read in by this unit, select required shot marks, delete shot marks, and so on. You can also add a memo mark (#) to a shot mark in the list.
During tape playback, you can add virtual shot marks to the list. This is not written on the tape itself.

Cuing up to shot marks

By selecting a desired shot mark from the shot mark list, you can cue up immediately to that position. By means of a button operation, you can also cue up to the shot marks adjacent to the current tape position (index function).

Shot data display

When the tape includes shot data (camera, time, and other information captured at the time of shooting), you can read this in, and display the details on a monitor. It is also possible to display the shot mark list and shot data simultaneously.

Sorting shot marks by cassette

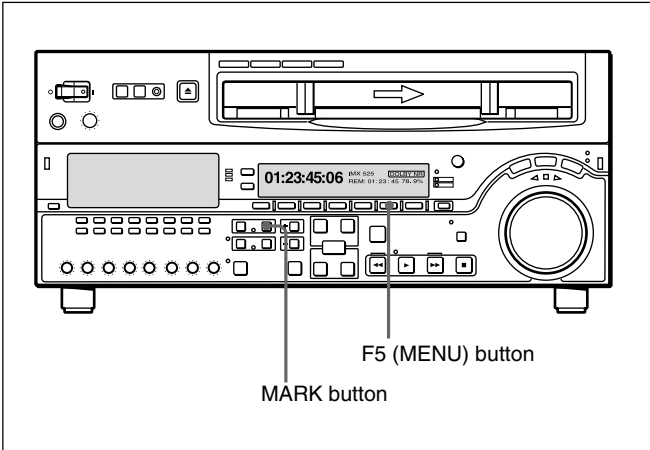
When the tape includes shot data, this unit recognizes which cassette each shot mark comes from. You can therefore sort the read-in shot marks by cassette in time code order.

5-2 Shot Mark Operation Menu

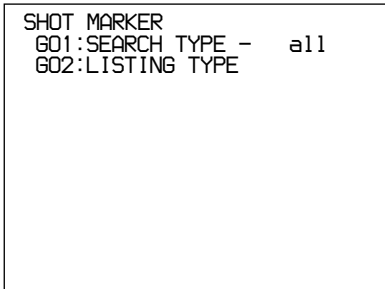
This section describes the settings in the shot mark operation menu.

Displaying the shot mark operation menu

With the function menu HOME page showing in the menu display, hold down the MARK button, and press the F5 (MENU) button.



The following menu appears on the monitor.



Details of the shot mark operation menu

The shot mark operation menu comprises two items, G01 and G02. The detailed contents appear in the following table.

Item number	Item name	Settings
G01	SEARCH TYPE	Select which shot mark type the index function searches for, from the following possibilities: all rec start mark shot mark 1 shot mark 2 post mark
G02	LISTING TYPE	For each type of shot mark, select whether to read into the list (ON) or not read (OFF): rec start mark shot mark 1 shot mark 2 post mark

Changing the menu settings

The basic procedure for accessing menu items and changing settings is the same as for the setup menus. Note, however, the operations in “To change the settings of menu items with sub-items” (page 8-3) for item G02.

Similarly to the setup menu, the shot mark operation menu is configured so that its current settings as well as menu banks are saved separately for 525-line and 625-line modes. For the menu bank operation of the shot mark operation menu, the same procedure is used as that of the setup menu.

For details of the setup menu configuration and operations, see Section 7-1 “Setup Menu Configuration” (page 8-1) and Section 8-2 “Setup Menu Operations”(page 8-2), respectively.

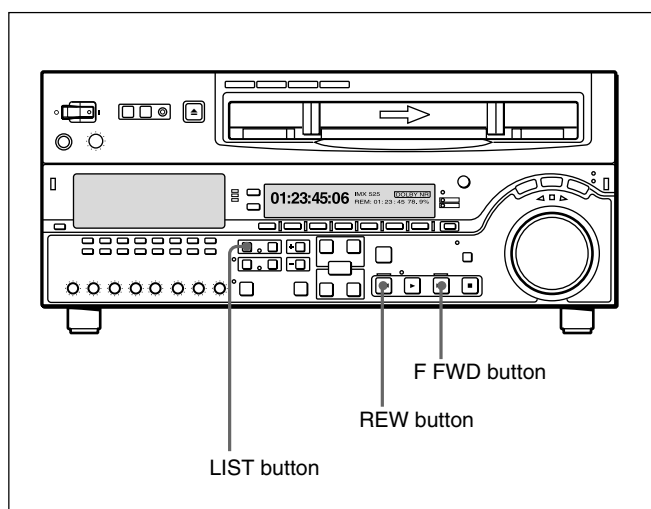
5-3 Shot Mark Operations

This section describes the operations concerning reading and writing shot marks. Note that the following operations cannot be carried out by remote control.

5-3-1 Reading Shot Marks

To read in shot marks

With a cassette loaded, hold down the LIST button and press the F FWD or REW button.



While the shot marks are being read in, the F FWD or REW button flashes.
The unit searches to the end of the tape, then rewinds automatically.

For the procedure for displaying a list of shot marks read in, see page 5-4.

Note

It is only possible to read in a maximum of 200 shot marks.
When 200 shot marks have been read in, the control panel display shows the message “S-LIST FULL”, and the reading stops.
To cancel the message, press one of the tape transport buttons.

To stop reading

Press the STOP button.

Reading shot marks from more than one cassette

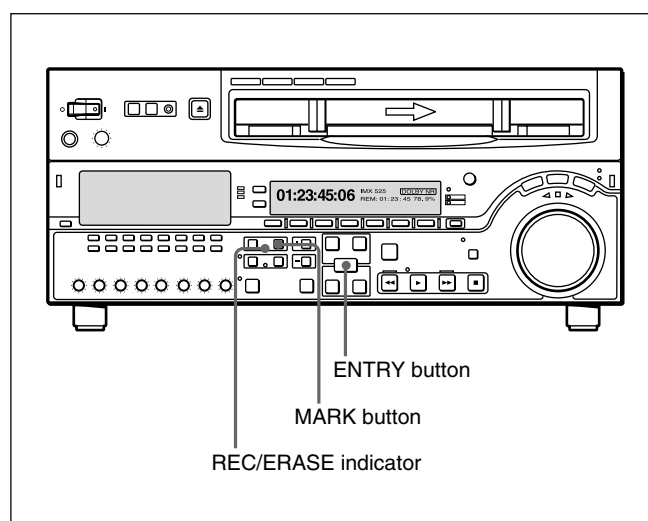
After changing the cassettes, carry out the reading operation again.

Data written in the new cassette will be added as long as the total does not exceed 200 shot marks. For example, if 190 shot marks have already read in, only 10 shot marks will be read from the new tape.

In the shot mark list (*see page 5-4*) the data from different cassettes is separated by a row of dashes.

5-3-2 Writing Post Marks

When this unit is in any of the playback, stop, or search modes, you can write a post mark only.



- 1 Hold the MARK button down for at least 2 seconds.

The REC/ERASE indicator lights.

- 2 At the position you wish to write the mark, hold down the ENTRY button and press the MARK button.

A post mark is written the instant you pressed the MARK button.

While the mark is being written, the message “RECORD SHOT MARK” appears on the monitor, and the REC/ERASE indicator flashes.

5-3 Shot Mark Operations

Erasing a shot mark

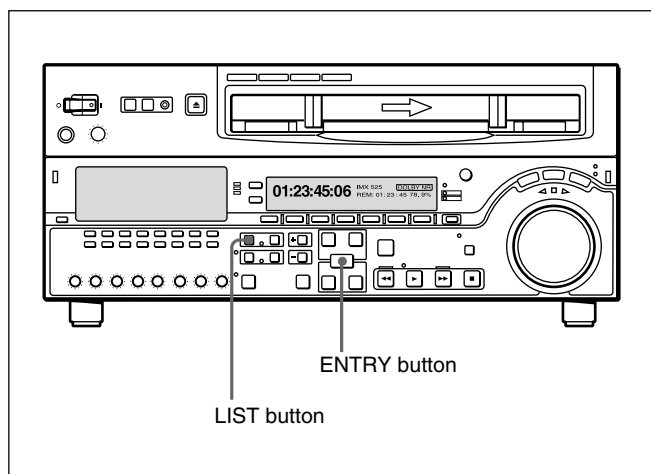
Select the shot mark from the shot mark list, and then carry out the deletion operation.

For details of the procedure, see page 5-5.

5-3-3 Shot Mark List Operations

Displaying the shot mark list

Hold down the ENTRY button and press the LIST button.



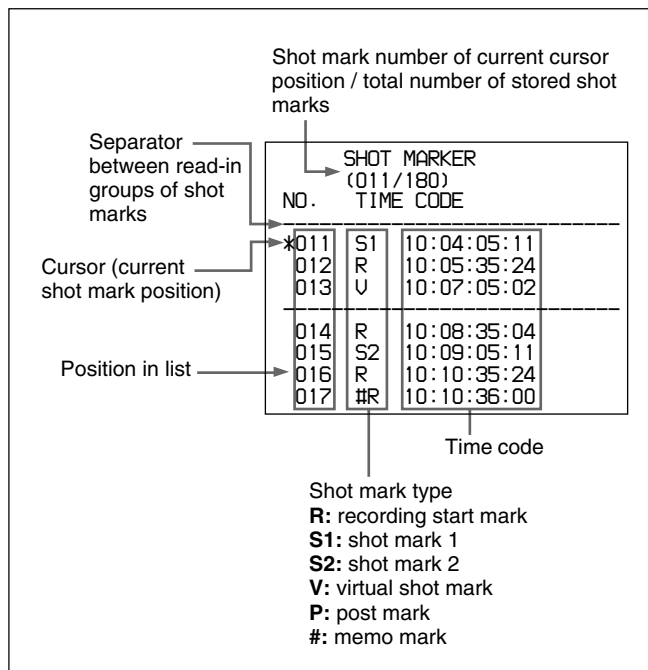
All of the shot mark types for which item G02 in the shot mark operation menu is set to “ON” appear in the list. If you do the same operation again, the list display disappears.

While the shot mark list is displayed, the function menu display changes as follows.

SHT						
MRK	MEMO	SELECT	DELETE		SETING	EXIT

Example of list display

The following figure shows how the list is organized.

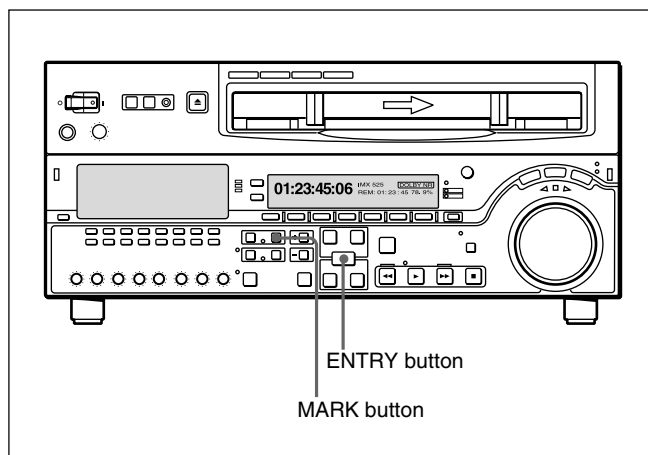


Selecting a shot mark

Turn the MULTI CONTROL knob to align the asterisk cursor with the desired shot mark.

Entering virtual shot marks

When the REC/ERASE indicator is off, hold down the ENTRY button and press the MARK button.



A virtual shot mark appears on the monitor as “V-MARK xxx” (xxx is the number). This is not written to the tape.

After entering a virtual shot mark, if you change the cassette or power the unit off, it appears in the list as the first shot mark of the next group read in.

Adding a memo mark (#)

Select the shot mark to which you wish to add the memo mark, then press the F1 (MEMO) button. Repeat this operation to remove a memo mark.

Selecting the types of shot mark to be read in the list

For each of the types of shot mark (recording start mark, shot mark 1, shot mark 2, and post mark) you can specify whether it is read in.

In item G02 of the shot mark operation menu, set the required types to “ON”.

For details of the menu, see page 5-2.

You can also use the following procedure.

- 1** With the shot mark list displayed, press the F5 (SETTING) button.

You can now select the shot mark types.

The function menu display changes as follows.

SHT						
MRK	PREV	NEXT	OFF	ON		EXIT

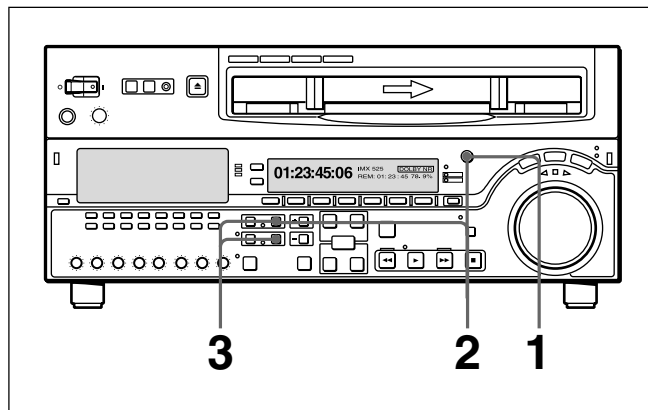
- 2** Press the F1 (PREV) or F2 (NEXT) button to select a shot mark type.
- 3** Press the F4 (ON) or F3 (OFF) button to switch between ON (displayed) and OFF (not displayed).
- 4** To return to the shot mark list, press the F6 (EXIT) button.

Deleting a shot mark from the list

To delete a shot mark or the shot mark list, you can use the F2 (SELECT) button instead of the MARK button, and the F3 (DELETE) button instead of the DELETE button.

To delete an individual shot mark

Use the following procedure.



- 1** With the shot mark list displayed, select the shot mark to be deleted using the MULTI CONTROL knob.

- 2** Hold the MARK button down.

While you hold down the button, an “X” appears after the selected shot mark number, indicating that it will be deleted.

To delete more than one shot mark, while holding down the MARK button turn the MULTI CONTROL knob to select all of the shot marks.

- 3** With the MARK button held down, press the DELETE button.

This deletes the shot marks which were marked by an “X”.

To delete the entire list

Hold down the DELETE button and press the LIST button.

This deletes all shot marks from the list. This does not erase marks from the tape.

5-3 Shot Mark Operations

Erasing shot marks from the tape

To erase a shot mark, use the following procedure.

Note

Once you erase a shot mark from the tape, it cannot be read back in.

- 1 With no shot mark list displayed, hold the MARK button down for at least 2 seconds.

The REC/ERASE indicator lights, indicating that you can rewrite or erase shot marks.

- 2 Display the shot mark list.
- 3 Turn the MULTI CONTROL knob to select on the list the shot mark you wish to erase.
- 4 Press the DELETE button and MARK button simultaneously.

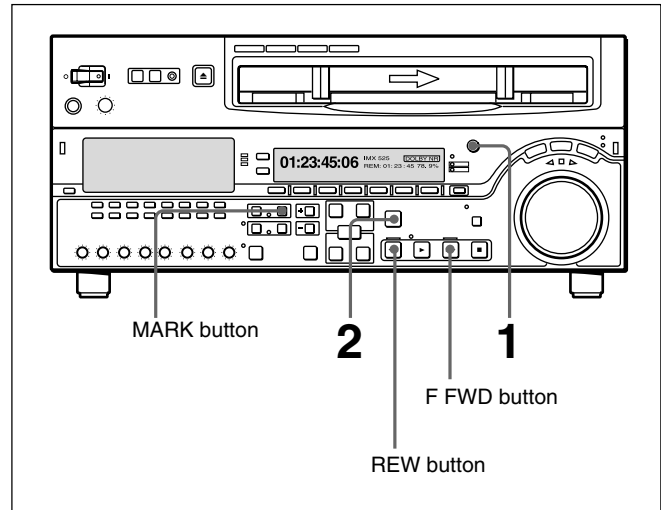
During the erasure process the message “ERASE SHOT MARK” appears, and the REC/ERASE indicator flashes.

- 5 When the shot mark has been erased, close the shot mark list.
- 6 Hold down the MARK button for at least 2 seconds, to turn off the REC/ERASE indicator.

5-3-4 Cuing Up to Shot Marks

Cuing up to a selected shot mark

Use the following procedure.



- 1 Select the desired shot mark from the shot mark list.
- 2 Press the PREROLL button.

Cuing up to shot marks adjacent to the current tape position (index function)

- 1 In item G01 of the shot mark operation menu (page 5-2), select one of recording start mark, shot mark 1, shot mark 2, and post mark, or select all.
- 2 Holding down the MARK button, press the F FWD button or REW button.

While the tape is moving the F FWD button or REW button flashes.

When the shot mark is detected, its type is displayed in time data display area 2 on the lower control panel and in the character information display on the monitor screen.

For details of character information display on the monitor screen, see F4 (CHARA) in function menu page 4 (page 7-6) and setup menu item 005 (page 8-5).

Note

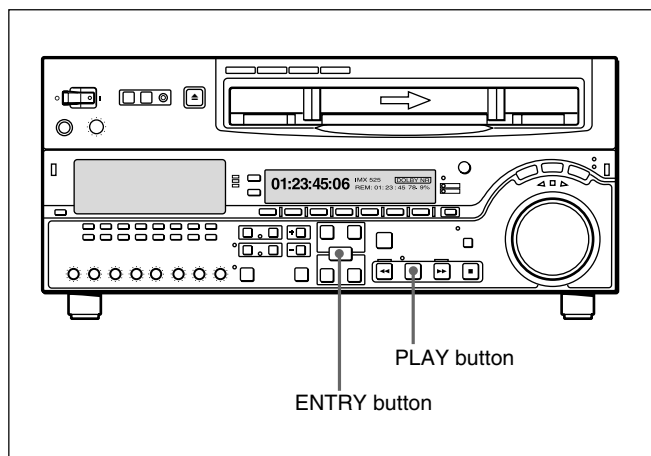
You cannot use the above procedure to cue up to a virtual shot mark.

5-3-5 Reading In Shot Data

When there is shot data (time, device, and other information about the shooting) written on the tape, you can read it in and display it on the monitor.

Displaying the shot data

Holding down the ENTRY button, press the PLAY button.



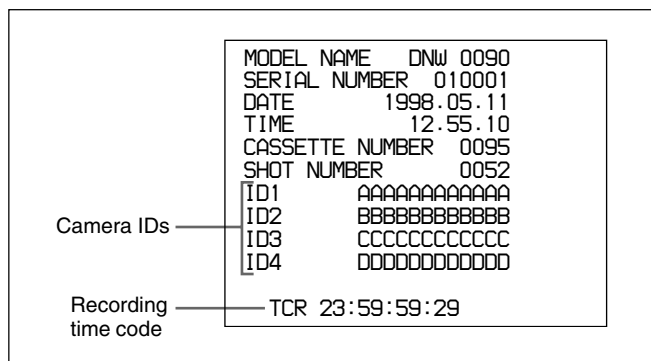
The tape is played back, and the shot data displayed.

To delete the shot data

Once again hold down the ENTRY button, and press the PLAY button.

Example of shot data display

The shot data display appears as shown below.

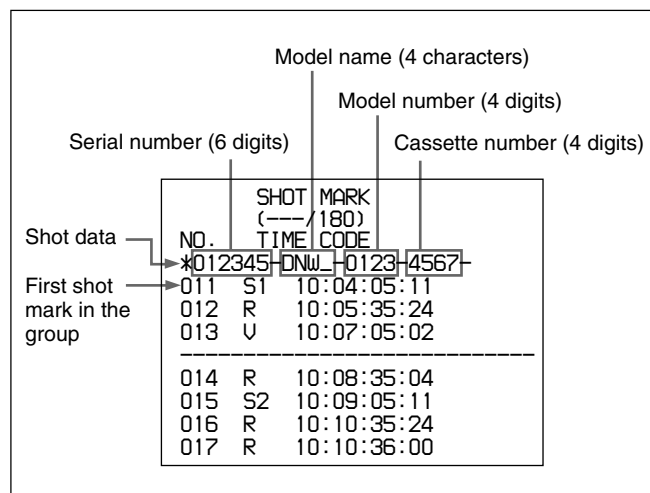


The details in the shot data depend on the shooting conditions. If because of the devices used there is no shot data on a part of the tape, it appears as blank.

Displaying the shot data on the shot mark list

Turn the MULTI CONTROL knob to position the cursor on a separator in the shot mark list.

If there is shot data recorded when the immediately following shot mark was written, it appears in the display as shown below.



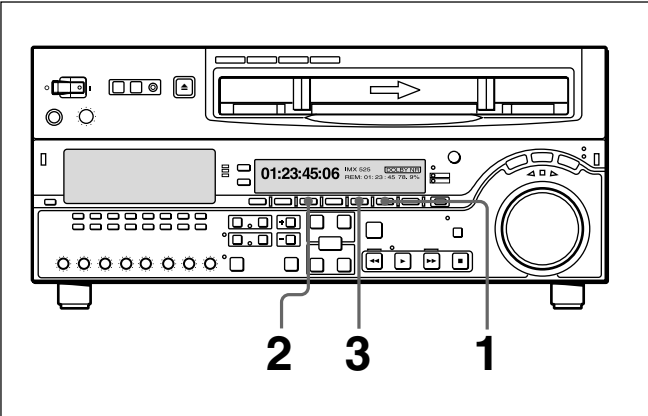
You can sort the shot marks in the list, based on the shot data. For details, see the next section.

5-3 Shot Mark Operations

5-3-6 Sorting Shot Marks

Based on shot data recorded on the tape, you can separate the shot marks by cassette, and sort them in time code sequence.

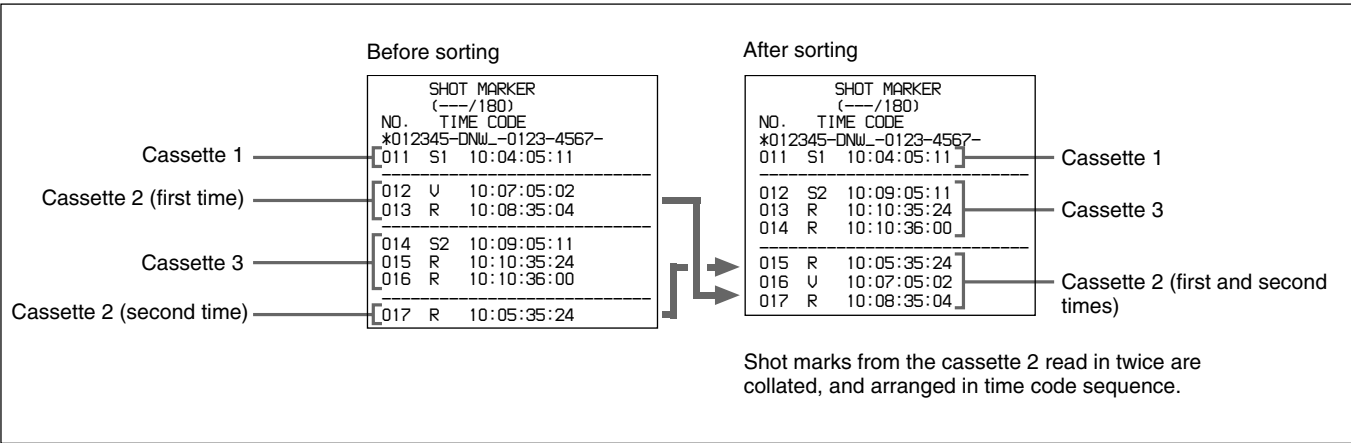
To sort the shot marks
Use the following procedure.



- 1 With the shot mark list displayed, press the F5 (SETTING) button.
- 2 Press the F2 (NEXT) button, and select SORTING LIST.
- 3 Press the F4 (ON) button to change the setting to ON.

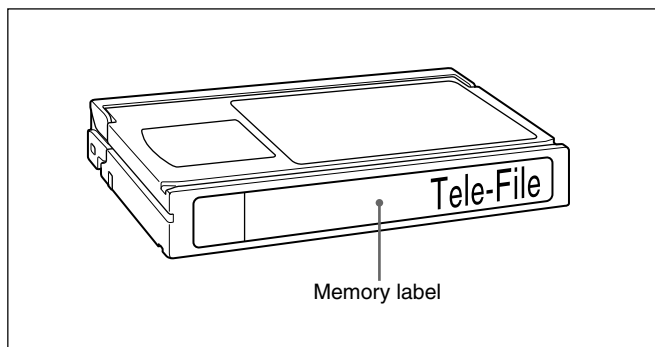
Sorting starts. When it ends, the setting indication returns to OFF.

For example, if shot marks have been read in twice from the same cassette, these can be collated as shown in the following figure.



6-1 Overview of Tele-File Functions

Tele-File is a non-contact data carrier system. Tele-File increases the efficiency of data management and operations such as playback and editing by enabling information to be exchanged between VTRs with data reading and writing functions and cassettes with Tele-File labels.



Newly developed IC

The Tele-File system employs a newly developed memory IC with the following features.

- **Thin design:** With a thickness of 0.5 mm, the IC can be attached to cassettes as a memory label.
- **Memory capacity:** 1 KB/8 KB (user area, rewritable)
- **Data transfer speed:** 100 kbps
- **Security functions:** Reading and writing authorization can be controlled through multiple passwords and permission settings.

Data management in clip units

In Tele-File, data is managed in units called “clips.” A clip consists of the following data items, whose settings can be displayed and changed.

- Cue point
- Write protect
- Mark
- Recording start point
- IN point
- OUT point
- Take number
- Cut number
- Scene number
- Comment

Data library management with handy reader/writer

An optional handy reader/writer (supporting Memory Stick) is available to facilitate data library management.

6-2 Opening the Tele-File Menu

Opening from the function menu

Display page 5 of the function menu in the menu display section, and then press the F1 (TELE-F) button.

The Tele-File menu opens.

For details about the function menu, see Chapter 7 “Function Menu” (page 7-1).

Opening automatically

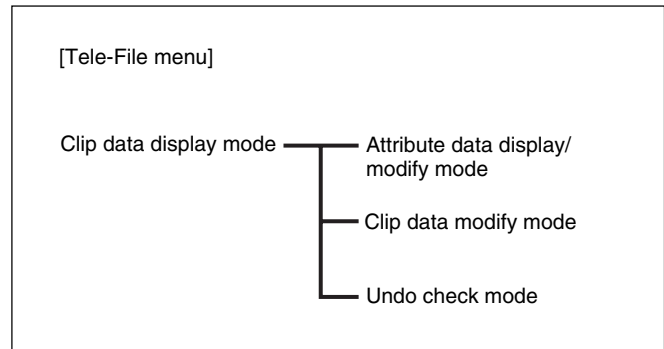
When setup menu item 134 is set to ON, and when the current function menu page is HOME, HOME2, or page 1 to page 5, the Tele-File menu opens automatically whenever a Tele-File label is detected on a cassette loaded into the VTR.

For details about setup menu item 134, see Section 8-4 “Items in the Extended Setup Menu” (page 8-10).

Configuration of the Tele-File menu

The Tele-File menu has a tree structure, as illustrated below.

When the menu first opens, the menu operation mode is clip data display mode.



6-3 Tele-File Menu

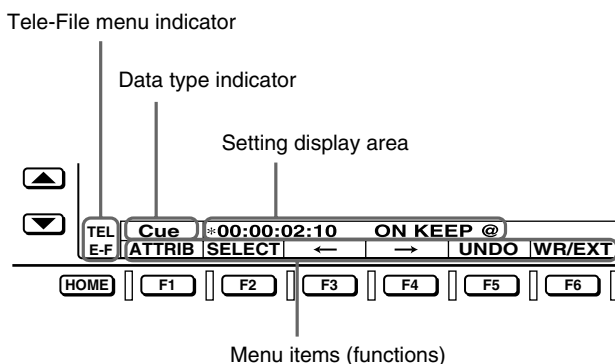
6-3-1 Clip Data Display

How to read the display

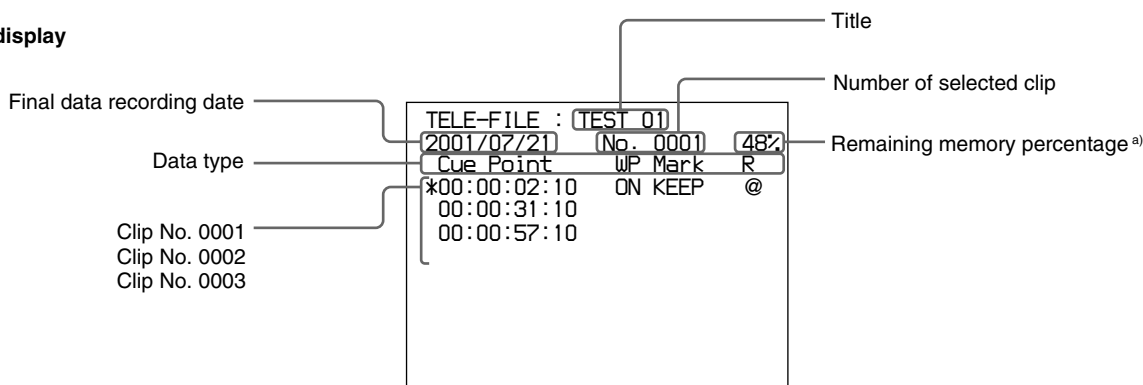
Shown below are examples of the default menu displays in the menu display section and the monitor display.

For more information about how to display menus on the monitor, see the section “To display menus on the monitor” (page 8-2).

Menu display section



Monitor display



a) The Tele-File memory always contains the attribute data so that this indication never shows “100%.”

Tele-File menu indicator

Indicates that the menu display section is currently displaying the Tele-File menu.

Data type indicator

Indicates the type of data selected with the clip data display mode. There are the following types.

Cue: Cue point

Protct: Write protected

Mark: Mark

R-Strt: Recording start point

IN: IN point

OUT: OUT point

Take: Take number

Cut: Cut number

Scene: Scene number

Comnt: Comment

Setting display area

Displays the setting of the currently selected data type, and a cursor (“*” or “>”).

The meaning of the cursor symbols is as follows:

- *: Indicates that the mode is clip data display mode or attribute data display/modify mode, and that data is selected.
- >: Indicates that the mode is clip data modify mode or attribute data display/modify mode, and prompts for data entry or modification.

Menu items (functions)

Display menu items (functions). These are common for all of the data items in clip data display mode. The function assignments for each item are as follows.

Clip data display mode menu items

Item name	Function
F1 (ATTRIB)	Selects attribute data display/modify mode. <i>For details about attribute data display/modify mode, see Section 6-3-5 “Displaying and Modifying Attribute Data” (page 6-11).</i>
F2 (SELECT)	Selects a data modification mode for the data selected in the clip. The cursor changes from “*” to “>”. <div>Note</div> <p>In the following cases, the SELECT item does not appear, and it is not possible to select a data modification mode.</p> <ul style="list-style-type: none">• When setup menu item 133 is set to REMOTE• When the memory label itself is write protected <i>For more information about clip data modifications, see Section 6-3-3 “Modifying Clip Data” (page 6-7).</i>
F3 (←)	Selects data in a clip. With each press, the “*” cursor moves to select the previous data item. The display scrolls to the left when the cursor moves to data that is not currently displayed.
F4 (→)	Selects data in a clip. With each press, the “*” cursor moves to select the next data item. The display scrolls to the right when the cursor moves to data that is not currently displayed.
F5 (UNDO)	Selects undo check mode. This button appears and is enabled when data has been modified after being read from the Tele-File label. <i>For more information about undo check mode, see Section 6-3-4 “Undo/Resume Functions” (page 6-10).</i>
F6 (WR/EXT)	Writes data and exits from the Tele-File menu (return to function menu page 5).

Title

The title (maximum 14 characters) set in attribute data display/modify mode.

Selected clip number

A 4-digit number representing the number of the selected clip (with the “*” cursor).

Remaining memory percentage

The percentage of remaining memory (user area) available for use.

If there is not sufficient free memory, the message <<MEMORY FULL!!>> appears (stays lit for three seconds) in time data display area 2 when you attempt to add data.

Final data recording date

The data (year/month/day) on which data was most recently recorded.

Data type

The data type. The displayed data is the same as the data displayed in the menu display section, but some of the captions are different. There are the following types.

Cue Point: Cue point

WP: Write protected

Mark: Mark

R: Recording start point

IN Point: IN point

OUT Point: OUT point

Tk: Take number

Cut: Cut number

Scn: Scene number

Comment: Comment

Clip data No. 0001...

Data is displayed for 1 clip per line.

Clips are assigned continuous numbers, beginning with No. 0001 for the clip on the top line.

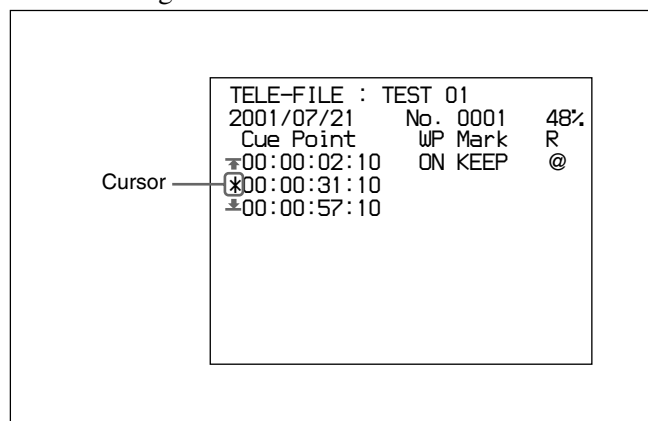
To select clips

Rotate the MULTI CONTROL knob in clip data display mode.

The data for the selected clip appears in the menu display section, where it is selected.

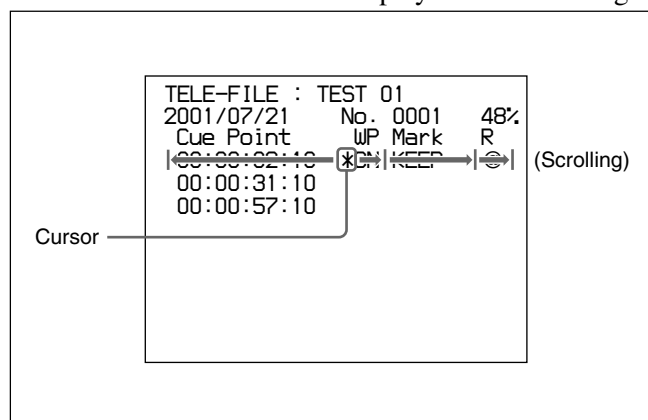
In the monitor display, the “*” cursor moves up and down as clips are selected.

Data which is not visible is selected and displayed after scrolling.

**To select data in a clip**

In clip data display mode, press the F3 (←) or F4 (→) button.

The “*” cursor moves and data is selected. Data which is not visible is selected and displayed after scrolling.



Moving the cursor directly

Regardless of the cursor's current position, pressing one of the following buttons moves the cursor directly to the specified position in the same clip and displays the data.

IN (video IN point) button: IN point data

OUT (video OUT point) button: OUT point data

MARK button: Cue point data

To display the duration

Press the IN (video IN point) and OUT (video OUT point) buttons simultaneously. The cursor moves to the IN point data of the same clip, and the duration appears while the buttons are held down. If there is no IN point or OUT point data, the duration is displayed as 0:00:00:00.

To cue up the cue point, IN point, or OUT point

- 1 Select a clip.
- 2 Press the PREROLL button while holding down the IN (video IN point), OUT (video OUT point), or MARK button.

The unit exits from the Tele-File menu and cues up the position of the data selected in step **2** (the cue point position if the MARK button was pressed).

Note

The unit does not preroll if there is no data for the selected point.

6-3-2 Preroll and Cue Up Using Clip Data

In clip data display mode, you can use clip data to preroll and cue up.

To preroll to the cue point, IN point, or OUT point

- 1 Select a clip.
- 2 Select the cue point, the IN point, or the OUT point.
- 3 Press the PREROLL button.

The unit exits from the Tele-File menu and prerolls to the position of the selected data.

The preroll time is according to the setting of setup menu item 001.

Note

The unit does not preroll if there is no data for the selected point.

6-3-3 Modifying Clip Data

To modify clip data, put the unit into clip data display mode and then press the F2 (SELECT) button to put it into clip data modification mode (the cursor changes to “>”).

The function assignments for menu items in clip data modification mode are as follows.

Clip data modification mode menu items

Item name	Function
F1 (RETURN)	Returns to clip data display mode.
F2 (MODIFY)	<p>Changes the setting of the selected data, or makes a new setting. The function button changes according to the data type.</p> <p><i>See the following for more information about how to set the various data types.</i></p> <ul style="list-style-type: none"> • Cue point, IN point, OUT point: “To set timecode data” (page 6-8) • Write protect, mark, recording start point: “To make write protect, mark, and recording start point settings” (page 6-9) • Take number, cut number, scene number: “To make take number, cut number, and scene number settings” (page 6-9) • Comment: “To make comment settings” (page 6-10)
F3 (DELETE)	<p>Deletes the data setting value. Enabled when cue point, IN point, OUT point, take number, cut number, scene number, or comment data is selected.</p> <p>A confirmation message appears. Press one of the following buttons to confirm or cancel the operation.</p> <ul style="list-style-type: none"> • F1 (CANCEL): Cancels the deletion and returns to clip data display mode. • F2 (OK): Executes the deletion and returns to clip data display mode.
F4 (DEL LN)	<p>Deletes the selected clip.</p> <p>A confirmation message appears. Press one of the following buttons to confirm or cancel the operation.</p> <ul style="list-style-type: none"> • F1 (CANCEL): Cancels the deletion and returns to clip data display mode. • F2 (OK): Executes the deletion and returns to clip data display mode.
F5 (INS LN)	<p>Inserts a clip at the cursor position.</p> <p>A confirmation message appears. Press one of the following buttons to confirm or cancel the operation.</p> <ul style="list-style-type: none"> • F1 (CANCEL): Cancels the insertion and returns to clip data display mode. • F2 (OK): Executes the insertion and returns to clip data display mode.
HOME + F4 (DELETE ALL)	<p>Deletes all clips.</p> <p>A confirmation message appears. Press one of the following buttons to confirm or cancel the operation.</p> <ul style="list-style-type: none"> • F1 (CANCEL): Cancels the deletion and returns to clip data display mode. • F2 (OK): Executes the deletion and returns to clip data display mode.

To add and delete clips

To add clips

- 1 Rotate the MULTI CONTROL knob to move the “*” cursor to the position where you want to insert the clip.

- 2 Press the F2 (SELECT) button.

The unit enters clip data modification mode.

- 3 Press the F5 (INS LN) button.

A confirmation message “INSERT CLIP OK?” appears.

- 4 Press the F2 (OK) button.

The clip is added at the position to which you moved the cursor in step 1.

To delete clips

- 1 Select the clip to delete.

- 2 Press the F2 (SELECT) button.

The unit enters clip data modification mode.

- 3 Press the F4 (DEL LN) button.

A confirmation message “DELETE THIS CLIP OK?” appears.

- 4 Press the F2 (OK) button.

The clip selected in step 1 is deleted.

To set timecode data

Proceed as follows to make or change settings for cue point, IN point, and OUT point data.

- 1 Select a clip.

- 2 Select cue point, IN point, or OUT point.

- 3 Press the F2 (SELECT) button.

The unit enters clip data modification mode.

- 4 Press the F2 (MODIFY) button.

The two most significant digits begin to flash, and the data can be set or modified.

- 5 Press the F3 (←) or F4 (→) button until the digit that you want to set starts flashing.

- 6 Rotate the MULTI CONTROL knob to make the setting.

To display the offset from the previous setting value

The offset is displayed as long as you hold down the F2 (OFFSET) button.

- 7 Repeat steps 5 and 6 until you have set all the required digits.

- 8 Press the F5 (SET) button.

The setting is confirmed and the unit returns to clip data display mode.

To cancel the setting or modification and return to clip data display mode

Press the F1 (CANCEL) button.

To set the set or modified data as other time data

Press the F6 (SET TO) button and select the time data (cue point, IN point, or OUT point), and then press the F5 (SET) or F6 (SET NL) button. The position where the data is set differs as follows, depending on the button pressed.

- **F5 (SET):** The data is set in the selected time data position.
- **F6 (SET NL):** A new clip is added at the lowest line and the time data is set at the selected data position in the new clip.

To make write protect, mark, and recording start point settings

Proceed as follows to make write protect, mark, and recording start point settings.

- 1** Select a clip.
- 2** Select write protect, mark, or recording start point.
- 3** Press the F2 (SELECT) button.

The unit enters clip data modification mode.

- 4** Press the F2 (MODIFY) button.

The data entry area begins to flash, and the data can be set.

- 5** Select the data by pressing the F3 (+) or F4 (–) button or rotating the MULTI CONTROL knob.
- 6** Press the F2 (SET) button.

The data setting is confirmed and the unit returns to clip data display mode.

To make take number, cut number, and scene number settings

Proceed as follows to make take number, cut number, and scene number settings.

- 1** Select a clip.
- 2** Select take number, cut number, or scene number.
- 3** Press the F2 (SELECT) button.

The unit enters clip data modification mode.

- 4** Press the F2 (MODIFY) button.

The most significant digit begins to flash, and the data can be set.

- 5** Press the F3 (←) or F4 (→) button until the digit that you want to set starts flashing.
- 6** Rotate the MULTI CONTROL knob to make the setting.
- 7** Repeat steps **5** and **6** until you have set all the required digits.
- 8** Press the F2 (SET) button.

The setting is confirmed and the unit returns to clip data display mode.

To make comment settings

Proceed as follows to make comment settings.

- 1** Select a clip.
- 2** Select comment.
- 3** Press the F2 (SELECT) button.

The unit enters clip data modification mode.
- 4** Press the F2 (MODIFY) button.

The data entry area begins to flash, and the data can be set.
- 5** Enter a character by rotating the MULTI CONTROL knob.
- 6** Press F4 (→) button to move to the next character place.
- 7** Repeat steps **5** and **6** until you have entered the entire comment.

To delete characters

Press the F3 (←) or F4 (→) button until the character that you want to delete starts flashing, and then press the F5 (DELETE) button.

To insert characters

Press the F3 (←) or F4 (→) button until the character place after the place where you want to insert starts flashing, and then press the F6 (INSERT) button.

- 8** Press the F2 (OK) button.

The comment is confirmed and the unit returns to clip data display mode.

6-3-4 Undo/Resume Functions

Undo function

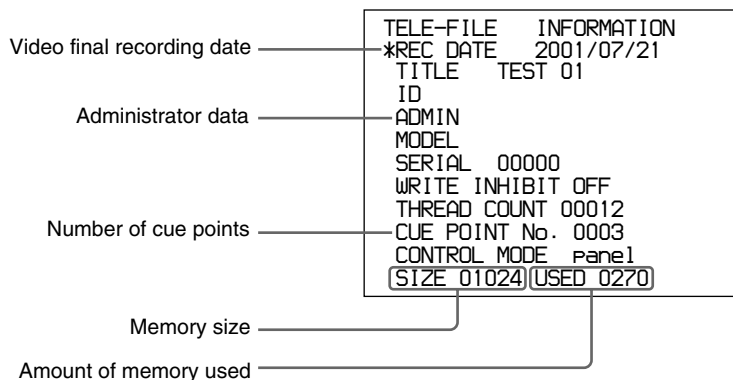
The undo function cancels all modifications and returns the data to the state it was in when first read. Press the F5 (UNDO) button in clip data display mode. A confirmation message appears. Press the F2 (OK) button to execute the undo and cancel all modifications to the data.

Resume function

If you have not modified any data since the last execution of the undo function, you can press the F5 (UNDO) button again. The button functions as a resume button, which cancels the immediately preceding undo. Press the F5 (UNDO) button in clip data display mode. A confirmation message appears. Press the F2 (OK) button to execute the resume and cancel the immediately preceding undo.

6-3-5 Displaying and Modifying Attribute Data

You can display and modify attribute data. The example below shows attribute data displayed on the monitor.



Video final recording date

The most recent date (year/month/day) on which video was recorded on the tape.

Title

The title (name assigned to Tele-File, etc., maximum 24 characters).

The title can be modified.

ID

The ID (unique number assigned to Tele-File, maximum 24 characters).

The ID can be modified.

Administrator data

Data about the administrator of the cassette or tape material (maximum 16 characters).

The administrator data can be modified.

Model name

The model name of the VTR that recorded most recently to the tape.

Serial number

The serial number of the VTR that recorded most recently to the tape.

Write inhibit setting

Whether the entire Tele-File is write inhibited. The write inhibit setting can be modified.

Thread count

The thread count value recorded on the tape.

Number of cue points

The number of cue points recorded in the Tele-File. You can check the cue point values in clip data display mode.

Control mode

The setting of menu item 133.

For more information about menu item 133, see page 8-10.

Memory size

The size of the memory in the Tele-File (unit: bytes).

Amount of memory used

The amount of memory currently being used (unit: bytes).

To modify attribute data

You can modify the title, ID, administrator data, and write inhibit setting attributes.

However, the attributes cannot be modified when the write inhibit setting is ON. Proceed as follows after setting the write inhibit setting to OFF.

- 1 Rotate the MULTI CONTROL knob to select the item.

The F2 (SELECT) button is enabled when you select an item that can be modified (title, ID, administrator data, and write inhibit setting).

- 2 Press the F2 (SELECT) button.

The data can be set or modified.

- 3 Rotate the MULTI CONTROL knob to set or modify the data..

- 4 Press the F2 (SET) button.

The change to the setting is confirmed.

Note

In the following cases, the SELECT item does not appear, and it is not possible to select a data modification mode.

- When setup menu item 133 is set to REMOTE
- When the memory label itself is write protected

For more information about clip data modifications, see Section 6-3-3 “Modifying Clip Data” (page 6-7).

To format the Tele-File memory

You can format the Tele-File memory (erase all modifiable data). However, the memory cannot be formatted in the following cases.

- When the write inhibit setting is ON
- When the control protocol is “remote”

To format Tele-File memory, proceed as follows.

- 1 Press the F4 (FORMAT) button.

A confirmation message appears.

- 2 Press the F2 (OK) button.

All modifiable data is erased.

Note

In the following cases, the FORMAT item does not appear, and it is not possible to select a data modification mode.

- When setup menu item 133 is set to REMOTE
- When the memory label itself is write protected









For more information about clip data modifications, see Section 6-3-3 “Modifying Clip Data” (page 6-7).

7-1 Overview

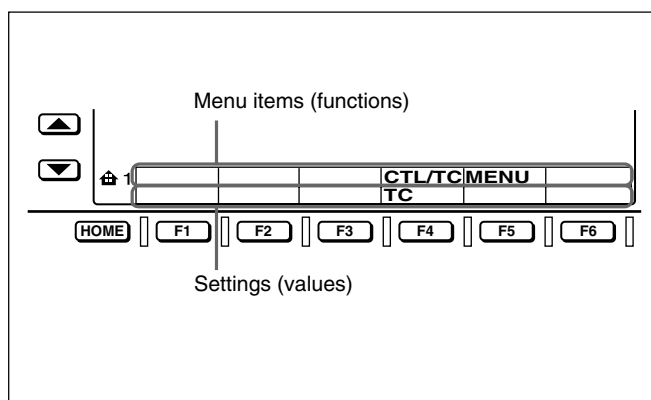
The function menu allows you to make frequently made settings, such as time code settings.

7-1-1 Function Menu Configuration

The function menu consists of six pages by factory default: the HOME page and five pages numbered 1 to 5. You can also display the HOME2 page by setting user-defined function keys. The following icons appear at the left edge of the menu display section to denote the current page.

-  1: HOME page
-  1: Page 1
-  2: Page 2
-  3: Page 3
-  4: Page 4
-  5: Page 5
-  6: Page 6
-  2: HOME 2 page

Each page has a menu display section made up of an upper and lower part. The upper part displays the menu items (functions) in the page, and the lower part displays the menu item settings. The figure below shows the menu display section in the HOME page.



In the figure above, TC (time code) is selected as the setting for CTL/TC (time data selection), the menu item for button F4. This manual refers to this as “F4 (CTL/TC) in function menu HOME page is set to TC.”

HOME2 page (user-defined function keys)

Up to six function keys can be defined (i.e. six functions can be assigned to the F1 to F6 buttons in the HOME2 page).

You can select and define the following function keys:

- Functions selected from the function menu items in the HOME page and menu pages 1 to 5
- Function key to display the setting for setup menu item 211 (REMOTE1 PORT) and to carry out the operation when the menu item setting is “panel”.

Note

By factory default, no function keys are defined in the HOME2 page.

It is not possible to display the HOME2 page unless you have defined at least one function key in that page.

For details on defining user-defined function keys in the HOME2 page, refer to the Maintenance Manual Volume 1.

Page 6

You can define up to six setup menu items (assign six setup menu items to the F1 to F6 buttons) and register them on page 6.

Note

There is nothing defined on page 6 when the unit is shipped from the factory.

For more information about defining setup menu items for page 6, refer to Volume 1 of the Maintenance Manual.

7-1-2 Using the Function Menu

To change a menu item setting

To change a menu item setting, press the corresponding function button (F1 to F6) to display the desired setting in the lower part of the menu display. Each press of the button displays the next setting.

When a menu item setting flashes

Menu item settings flash to inform you that you can change the setting value by rotating the MULTI CONTROL knob.

7-1 Overview

To change the function menu page

Press either of the page buttons (▼, ▲).

- The ▼ button selects the next page in the order
HOME→1→2→3→4→5→HOME...
- The ▲ button selects the next page in the order
HOME→5→4→3→2→1→HOME...

When there are setup menu definitions on page 6, page 6 is displayed between page 5 and the HOME page.

With one of menu pages 1 to 5 displayed, pressing the HOME button changes the page to the HOME page.

Pressing the HOME button when the HOME or HOME2 page is displayed changes the page to HOME2 or HOME, respectively.

Settings which do not appear in the menu display section

In the HOME page (*see the figure in Section 7-1-1 “Function Menu Configuration”*), the setting for F5 (MENU) does not appear in the menu display. When you press the F5 button, the whole menu page changes to allow you to set the item.

7-2 Function Menu Item List

The function menu has the following items.

In the “Setting” column of the table, the factory default settings are indicated by an enclosing box.

HOME page

Item	Setting
F4 (CTL/TC)	Selects the time data to display in time data display area 1 (<i>see page 2-6</i>). TC : Playback time code read by the internal time code reader. The LTC or VITC time data type indicator (<i>see page 2-6</i>) lights. ^{a)} UB : User bits data of playback time code. The LUB or VIUB time data type indicator lights, depending on whether the time code is LTC or VITC. ^{a)} CTL : The running time of the tape being played back, as calculated from a count of CTL signals recorded on the tape. The time is displayed in Hours:Minutes:Seconds:Frames format.
F5 (MENU)	Puts the system into setup menu mode (<i>see Chapter 8</i>). When the current setup menu settings are the same as the contents of any of menu banks 1 to 3, or the factory defaults, the corresponding indication (1), (2), (3), or (dflt) appears. (1) : Same as menu bank 1. (2) : Same as menu bank 2. (3) : Same as menu bank 3. (dflt) : Same as factory defaults.

a) The selection of LTC or VITC depends on the setting of F6 (TCR) in function menu page 1 .

Page 1

Item	Setting
F4 (DF)	In 525/60 mode, selects either drop-frame mode or non-drop frame mode for the time code generator and the CTL counter. DF : Drop-frame mode NDF : Non-drop frame mode
F6 (TCR)	Selects the type of time code to display in the time data display. LTC : Display LTC. AUTO : Display VITC when tape speed is 1/2 or less of normal speed, and LTC otherwise. VITC : Display VITC.

7-2 Function Menu Item List

Page 2

Item	Setting
F1 (V.PROC)	<p>Selects the control method for the internal digital video processor.</p> <p>LOCAL: Change the settings of the internal digital video processor by using this function menu.</p> <p>REMOTE: Use the optional BVR-50/50P Remote Control Unit to control the internal digital video processor.</p> <p>MENU: Change the settings of the internal digital video processor by using the MENU of the HOME page.</p>
F2 (VIDEO)	<p>Sets the video signal output level ($-\infty$ to +3 dB).</p> <p>PRESET: Regardless of manually values, the video signal is set to the standard level.</p> <p>Manual setting: With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the value for the video signal output level.</p>
F3 (CHROMA)	<p>Sets the chroma signal output level ($-\infty$ to +3 dB).</p> <p>PRESET: Regardless of manually set values, the chroma signal is set to the standard level.</p> <p>Manual setting: With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the value for the chroma signal output level.</p>
F4 (HUE) (525-line mode)/ (C PHAS) (625-line mode)	<p>Sets the color phase (phase relative to burst)</p> <p>PRESET: Regardless of manually set values, the color phase is set to the standard value.</p> <p>Manual setting: With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the value across the range $\pm 30^\circ$.</p>
F5 (SETUP) (525-line mode)/ (BLACK) (625-line mode)	<p>Sets the setup level (525/60 mode) or black level (625/50 mode)</p> <p>PRESET: Regardless of manually set values, the level is set to the standard value.</p> <p>Manual setting: With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the setup level across the range ± 30 IRE (525/60 mode) or to adjust the black level across the range ± 210 mV (625/50 mode).</p>
F6 (YC DLY)	<p>Sets amount of Y/C delay.</p> <p>PRESET: Regardless of manually set values, the Y/C delay is to the standard value.</p> <p>Manual setting: With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the Y/C delay across the range ± 100 ns.</p>

Item	Setting
F1 (SYNC)	<p>Sets the output signal sync phase.</p> <p>Setting method</p> <p>With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the output signal sync phase across the range $\pm 15 \mu\text{s}$ relative to this unit's input reference signal.</p> <p>Adjust this item when you want to adjust the output signal sync phase precisely to match a reference signal, or when connecting this unit and other VTRs to a device such as a switcher to perform operations such as special effects editing.</p>
F2 (SC)	<p>Sets the output signal subcarrier phase.</p> <p>Setting method</p> <p>With the displayed setting flashing, you can rotate the MULTI CONTROL knob to adjust the output signal subcarrier phase across the range $\pm 200 \text{ ns}$ relative to this unit's input reference signal.</p> <p>Adjust this item when you are using composite signals in editing and want to adjust the output signal subcarrier phase precisely to match a reference signal. Even when this value is adjusted, the output SCH (subcarrier to sync) phase is maintained.</p>
F4 (EMPHSS)	<p>Specifies whether to add audio emphasis to Betacam/Betacam SP format playback audio signals.</p> <p>ON: Add audio emphasis.</p> <p>OFF: Do not add audio emphasis.</p>
F5 (T INFO)	<p>Selects the type of time data to display in time data display area 2.</p> <p>TOTAL: Display total time.</p> <p>REMAIN: Display remaining time.</p>

Page 4

Item	Setting
F1 (CAPSTN)	<p>Selects the number of fields for capstan lock in playback and editing.</p> <p>In 525/60 mode</p> <p>2F: The capstan servo locks in units of 2 fields.</p> <ul style="list-style-type: none">• For tape output, color framing may not match the reference signal.• When playing back a tape that was recorded with composite source signals, a vertical shift in the video (H shift) occurs. (When setup menu item 712 is set to ON.) <p>4F: The capstan servo locks in units of 4 fields.</p> <ul style="list-style-type: none">• For tape output, color framing matches the reference signal.• Even when playing back a tape that was recorded with composite source signals, no vertical shift in the video (H shift) occurs. You should set this menu item to this setting when continuity in video phase across edit points is required for composite signal playback. <p>In 625/50 mode</p> <p>2F: The capstan servo locks in units of 2 fields.</p> <ul style="list-style-type: none">• For tape output, color framing may not match the reference signal.• When playing back a tape that was recorded with composite source signals, a vertical shift in the video (H shift) occurs. (When setup menu item 712 is set to ON.) <p>4F: The capstan servo locks in units of 4 fields.</p> <ul style="list-style-type: none">• For tape output, color framing may not match the reference signal.• When playing back a tape that was recorded with composite source signals, a vertical shift in the video (H shift) occurs. (When setup menu item 712 is set to ON.) <p>8F: The capstan servo locks in units of 8 fields.</p> <ul style="list-style-type: none">• For tape output, color framing matches the reference signal.• Even when playing back a tape that was recorded with composite source signals, no vertical shift in the video (H shift) occurs. You should set this menu item to this setting when continuity in video phase across edit points is required for composite signal playback.
F3 (DOLBY)	<p>When using oxide tapes, specifies whether or not to use the Dolby type C low-frequency noise reduction (NR) system.</p> <p>NR ON: Use the Dolby NR system when playing back analog Betacam oxide tapes.</p> <p>NR OFF : Do not use the Dolby NR system when playing back analog Betacam oxide tapes.</p>
F4 (CHARA)	<p>Specifies whether or not to superimpose time code, menu settings, error messages, and so on over the video signals output to the 3 (SUPER) connector in the SDI OUTPUT connectors, and the 3 (SUPER) connector in the COMPOSITE VIDEO OUTPUT connectors.</p> <p>ON: Superimpose.</p> <p>OFF: Do not superimpose.</p>
F5 (RECINH)	<p>Specifies whether or not to inhibit recording shot marks to tape.</p> <p>ON: Inhibit recording to tape.</p> <p>OFF: Do not inhibit recording to tape.</p>

Page 5

Page 5 is assigned to the Tele-File menu.

For more information about the Tele-File menu, see Section 6-3 “Tele-File Menu” (page 6-3).

8-1 Setup Menu Configuration

This unit has the following setup menus.

- Basic setup menu
- Extended setup menu

To access the extended setup menu, a setting on the internal SS-89 board is required.

For details, refer to the Installation Manual.

In this manual, both the basic setup menu items and extended setup menu items are also referred to simply as setup menu items or menu items.

Configuration of the basic setup menu

The basic setup menu comprises the following groups of items.

Item group	Function	Refer to
Items H01 to H14	Display of the total number of hours the unit has been powered on, and other information collected by the digital hours meter	Page 9-5
Items 001 to 099	Settings relating to the preroll time, superimposed text information, switching between 525-line (NTSC) and 625-line (PAL) operation modes, etc.	Page 8-5
Items B01 to B20	Settings relating to the menu banks for saving menu settings	Page 8-6

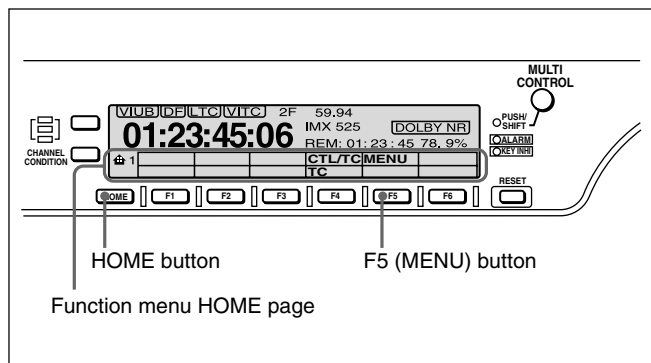
Configuration of the extended setup menu

The extended setup menu comprises the following groups of items.

Item group	Function	Refer to
Items 100 to 199	Settings relating to control panels	Page 8-7
Items 200 to 299	Settings relating to the remote control interface	Page 8-10
Items 300 to 399	Settings relating to editing operations	Page 8-11
Items 400 to 499	Settings relating to preroll	Page 8-12
Items 500 to 599	Settings relating to tape protection	Page 8-12
Items 600 to 699	Settings relating to the time code generator	Page 8-13
Items 700 to 799	Settings relating to video control	Page 8-13
Items 800 to 899	Settings relating to audio control	Page 8-16
Items 900 to 999	Settings relating to digital processing	Page 8-19

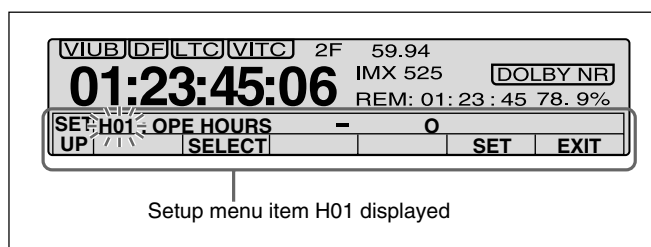
8-2 Setup Menu Operations

To display setup menus



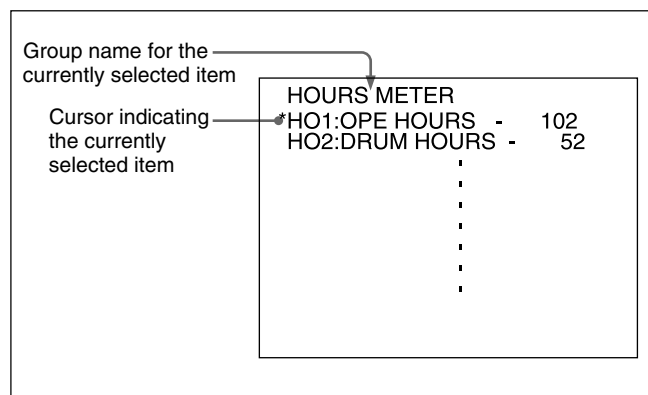
With the function menu HOME page showing in the menu display, press the F5 (MENU) button. The currently selected setup menu item is displayed in the menu display, with the menu item number flashing.

For basic operations in the menu display, see page 2-5.



To display menus on the monitor

Setting F4 (CHARA) to ON in function menu page 4 allows you to display setup menus on the monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or SDI OUTPUT 3 (SUPER) connector of this unit. When a setup menu appears on the monitor, a cursor indicates the currently selected menu item.

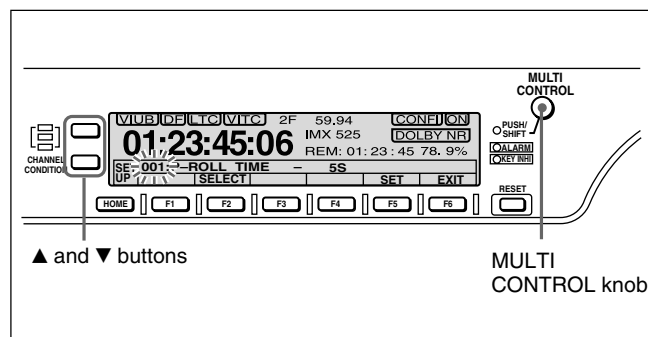


Customizing the setup menu

You can customize the setup menu so that items which you do not use are not displayed. “[C]” appears in the upper right of the monitor when the menu is customized (when there are items which are not displayed). However, there is no indication in the menu display section that the menu has been customized.

For details about how to customize the setup menu, refer to the Maintenance Manual.

Displaying a desired menu item



When the menu item number displayed in the menu display is flashing, you can change the menu item by turning the MULTI CONTROL knob. To skip from one item group to the next, press the ▲ button or ▼ button.

To display a desired sub-item

For a menu item having sub-items, you can select a desired sub-item as follows.

- 1 With a desired menu item selected, press the F2 (SELECT) button.

The currently selected sub-item name flashes.

- 2 Turn the MULTI CONTROL knob to select a desired sub-item.

Changing menu item setting values

The procedures for changing menu item setting values or sub-item setting values are described below.

To change the settings of menu items without sub-items

After selecting a desired menu item using the procedure described in the section “Displaying a desired menu item” on page 8-2 and with the menu item number flashing, proceed as follows.

- 1 Press the F2 (SELECT) button.

The current setting of the menu item flashes.
- 2 Press the F3 (–) button or F4 (+) button, or turn the MULTI CONTROL knob to select a desired setting value.

To select another menu item and change its setting value

Press the F1 (RETURN) button making the current menu item number flash, then perform the procedures for selecting a desired menu item and changing its setting value.

- 3 When all required changes have been made, press the F5 (SET) button.

This makes the new settings effective.

To abandon making changes and exit from the setup menu display

Press the F6 (EXIT) button.

To change the settings of menu items with sub-items

When a selected menu item has sub-items, select a desired sub-item using the procedure described in the section “To display a desired sub-item” on this page making the sub-item name flash, then proceed as follows.

- 1 Press the F2 (SELECT) button.

The current setting of the sub-item flashes.

- 2 Press the F3 (–) button or F4 (+) button, or turn the MULTI CONTROL knob to select a desired setting value.

To select another sub-item and change its setting value

Press the F1 (RETURN) button making the current sub-item name flash, then perform the procedures for selecting a desired sub-item and changing its setting value.

To select another menu item and change its setting value

Press the F1 (RETURN) button twice in succession making the current menu item number flash, then perform the procedures for selecting a desired menu item and changing its setting value.

- 3 When all required changes have been made, press the F5 (SET) button.

This makes the new settings effective.

To abandon making changes and exit from the setup menu display

Press the F6 (EXIT) button.

8-2 Setup Menu Operations

Resetting the menu settings to their factory default values (menu item B20)

To reset the current active menu settings to their factory default values, proceed as follows.

- 1 Perform steps **1** to **3** of the procedure described in the section “To change the settings of menu items without sub-items” on page 8-3 to set menu item B20 RESET SETUP to ON.

The current active menu settings are reset to their factory default settings.

- 2 Press the F5 (SET) button again.

This saves the menu settings.

Switching between 525-line and 625-line modes (menu item 013)

To switch between 525-line (NTSC) and 625-line (PAL) operation modes, proceed as follows.

Notes

- Before carrying out this operation, consult the person responsible for system installation.
- When the MSW-M2100 is used in the 625-line mode or when the MSW-M2100P is used in 525-line mode, analog tape can only be played back in the simple playback mode.

- 1 Perform steps **1** to **3** of the procedure described in the section “To change the settings of menu items without sub-items” on page 8-3 to set menu item 013 525/625 SYSTEM SELECT to ON.

You can now change the selection between 525-line and 625-line operation modes.

- 2 Switch the setting, then press the F5 (SET) button.
- 3 Turn the unit off.

Next time the unit is turned on, it operates in the new mode.

Menu bank operations (menu items B01 to B13)

This unit allows menu settings to be saved in what are termed “menu banks.” Saved sets of menu settings can be recalled for use as required.

To save the current active menu settings

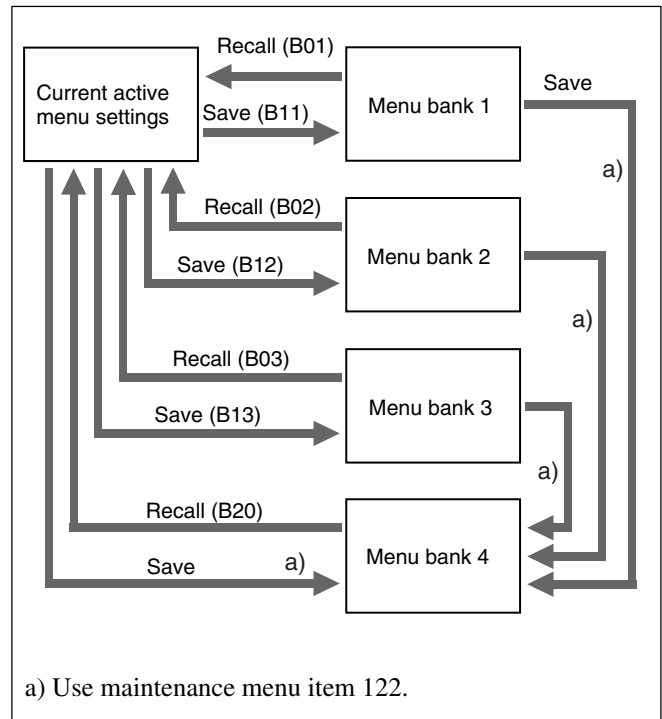
Set one of menu items B11 SAVE BANK 1 to B13 SAVE BANK 3 to ON, depending on which of the menu banks you wish to save in, then press the F5 (SET) button.

To recall settings from a menu bank

When recalling the settings saved in one of menu banks 1 to 3, set the corresponding one of menu items B01 RECALL BANK 1 to B03 RECALL BANK 3 to ON, then press the F5 (SET) button.

When you wish to recall the settings saved in menu bank 4, select bank-4 with menu item B20 PRESET SETUP.

For details about menu bank 4, refer to the Maintenance Manual.



The current active setup menu settings as well as settings saved in menu banks are stored in separate storage areas for 525-line and 625-line modes.

8-3 Items in the Basic Setup Menu

The basic setup menu contains the following items.

In the “Settings” column of the table, the factory default settings are indicated by an enclosing box.

Item number	Item name	Settings
001	PREROLL TIME	0S ...5S... 30S : Set the preroll time to between 0 and 30 seconds. A preroll time of at least 5 seconds is recommended when using this unit for editing.
002 ^{a)}	CHARACTER H-POSITION	Adjust the horizontal screen position of the character information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. 00 ...1C... 3C (525-line mode)/00 ...19... 36 (625-line mode) : The hexadecimal value 00 is for the far left of the screen and increasing the value moves the position of the characters to the right.
003 ^{a), b)}	CHARACTER V-POSITION	Adjust the vertical screen position of the first line of the characters information output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. 00 ...5C... 71 (525-line mode)/00 ...70... 88 (625-line mode) : The hexadecimal value 00 is for the top of the screen and increasing the value lowers the position of the characters.
005	DISPLAY INFORMATION SELECT	Determines the kind of character information to be output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector when the function menu item CHARA is set to ON. T&STA : Time data display information and the unit's status T&UB : Time data display information and the user's bits T&CTL : Time data display information and CTL T&T : Time data display information and time code (LTC or VITC) TIME : Time code (LTC or VITC) only If there is an overlap between the setting of this item and the setting of the control panel, it is automatically avoided. For example, if CTL is selected on the control panel and this menu item setting is T&CTL, then CTL and LTC are output.
006	LOCAL FUNCTION ENABLE	Determines which buttons on the control panel are enabled when this unit is controlled from external equipment. DIS : All buttons and switches are disabled. S&E&F : Only the STOP button, EJECT button, and F1 to F6 buttons are enabled. ENA : All buttons and switches are enabled.
007	TAPE TIMER DISPLAY	Determines whether to display the CTL count in 12-hour mode or 24-hour mode. + -12H : 12-hour mode 24H : 24-hour mode
009 ^{a)}	CHARACTER TYPE	Determines the type of characters such as time code output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. WHITE : White letters on a black background BLACK : Black letters on a white background W/OUT : White letters with black outline B/OUT : Black letters with white outline
011 ^{a)}	CHARACTER V-SIZE	Determines the vertical size of characters such as time code output from the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector and the SDI OUTPUT 3 (SUPER) connector for superimposed display on the monitor. x1 : Standard size x2 : 2 times standard size

a) When setting items 002, 003, 009 and 011, watch the monitor screen, and adjust to the required state.

(Continued)

b) When displaying time code values, there is a slight time delay. Therefore, when creating a tape for off-line editing, the information inserted in the upper half of the screen may be delayed by one frame.

8-3 Items in the Basic Setup Menu

Item number	Item name	Settings
012 ^{a)}	CONDITION DISPLAY VIDEO MONITOR	Specifies whether to add a channel condition indication to superimposed text, when “x1” is selected in menu item 011. DISABLE : Do not display. ENABLE : Display.
013	525/625 SYSTEM SELECT	Specify whether to enable switching between 525-line (NTSC) and 625-line (PAL) modes. OFF : Do not enable system switching. ON : Enable system switching. Setting this item to ON and switching the system enables the unit to operate in the system switched to. <i>For the switching between 525/625-line modes, see page 8-4.</i> Notes <ul style="list-style-type: none">• For the basic and extended setup menus, separate settings are saved for 525-line (NTSC) and 625-line (PAL) modes. When you switch systems, all menu items change to the settings established in the new system. (These are different from the settings for the mode before switching.)• When the MSW-M2100 is used in 625-line mode or when the MSW-M2100P is used in 525-line mode, analog tape can only be played back in the simple playback mode.

a) The channel condition indication appears under the timer or status line (under the video playback level indication during playback of an analog tape), in the format “V–A–”, where the symbol following the “V” indicates the rotating head condition for video channels and the symbol following the “A” indicates the rotating head condition for audio channels.

The following three symbols appear:

- “–” (good)
- “*” (fair)
- “■” (poor)

Item number	Item name	Settings
B01	RECALL BANK 1	Set to ON to recall menu settings from menu bank 1.
B02	RECALL BANK 2	Set to ON to recall menu settings from menu bank 2.
B03	RECALL BANK 3	Set to ON to recall menu settings from menu bank 3.
B11	SAVE BANK 1	Set to ON to save current active menu settings to menu bank 1.
B12	SAVE BANK 2	Set to ON to save current active menu settings to menu bank 2.
B13	SAVE BANK 3	Set to ON to save current active menu settings to menu bank 3.
B20	RESET SETUP	Set this item to ON to return the current menu settings to the factory defaults. Set it to bank-4 to use the contents of menu bank 4 as the current menu settings. <i>For details about menu bank 4, refer to the Maintenance Manual.</i>

8-4 Items in the Extended Setup Menu

The extended setup menu contains the following items.

In the “Settings” column of the table, the factory default settings are indicated by an enclosing box.

Menu items in the range 100 to 199, relating to the control panels

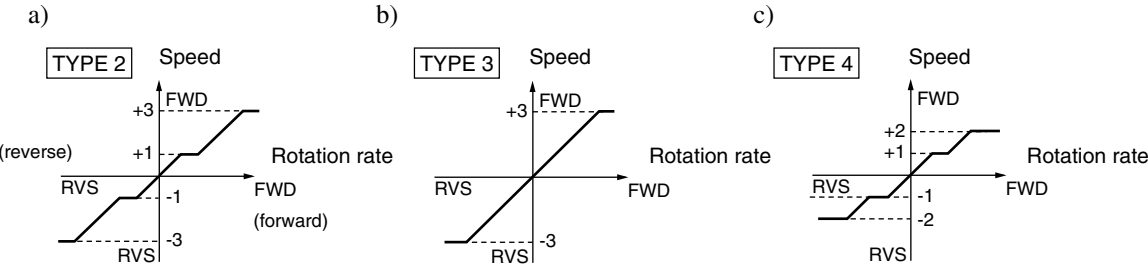
Item number	Item name	Settings
101	SELECTION FOR SEARCH DIAL ENABLE	Select how the unit enters the search mode. DIAL : Turning the search dial switches to search mode. KEY : One of the JOG, SHUTTLE, and VAR buttons must be pressed to switch to search mode.
102	MAXIMUM SPEED	Select the fast forward and rewind tape speed and also search mode speed during tape playback. MAX : Perform fast forward, rewind, and search mode playback at the maximum speeds. MX/24 : Perform fast forward and rewind at the maximum speeds, and search mode playback at up to 24 times normal speed. ×24 : Perform fast forward and rewind at 24 times normal speed, and search mode playback at up to 24 times normal speed. Maximum fast forward and rewind speeds <ul style="list-style-type: none">Analog cassette: 35 times (525-line mode) or 42 times (625-line mode) normal speed.Betacam SX/MPEG IMX cassettes: 60 times normal speed (525-line mode) or 78 times (625-line mode) Maximum search mode speeds <ul style="list-style-type: none">Analog cassette: 35 times (525-line mode) or 42 times (625-line mode) normal speed.Digital Betacam cassette: 50 times normal speed
103	AUDIO SELECTED LINE OUT	Select the output signal to the MONITOR OUTPUT connectors. MANU : Output the signals selected by the audio signal selection buttons on the lower control panel. AUTO1 : Output stereo, using the AFM channels (3 and 4) for playback from metal tape, and the LNG channels (1 and 2) for playback from oxide tape. AUTO2 : Output the signals selected by the audio signal selection buttons on the lower control panel, but during variable speed playback, if AFM is selected, automatically switch to LNG.
104	AUDIO MUTING TIME	Select the length of time for which audio muting occurs when the unit switches to playback either from stopped or from still playback in the search mode. OFF : Set the audio muting time to zero (i.e. no muting). 0.1S ... 1.0S : Set the audio muting time from 0.1 second to 1.0 second, in 0.1-second increments.
105	REFERENCE SYSTEM ALARM	Select whether or not to display a warning when the video reference signal is not supplied. OFF : No warning. ON : Flash the STOP button as a warning.
106	CAPSTAN LOCK	Select the capstan servo lock mode. PANEL : The capstan servo lock mode is determined by the function menu item CAPSTN. 2F : The capstan servo locks every two fields regardless of the setting of the function menu item CAPSTN. 4F : The capstan servo locks every four fields regardless of the setting of the function menu item CAPSTN. 8F (For 625-line mode only) : The capstan servo locks every eight fields regardless of the setting of the function menu item CAPSTN.

(Continued)

8-4 Items in the Extended Setup Menu

Menu items in the range 100 to 199, relating to the control panels (Continued)

Item number	Item name	Settings
111	TSO PLAY	Select whether or not to enable tape speed override mode. DIS : Disable tape speed override mode. TSO : Enable tape speed override mode. FFED : Enable feed play mode.
115	PHASE LOCK IN VARIABLE X3	Select whether or not to lock the capstan phase in ×3 variable speed play mode when playing back a Betacam or Betacam SP cassette. OFF : Do not lock. ON : Lock.
116	JOG DIAL RESPONSE	Select the tape speed characteristics for the search dial rotation rate (VTR commands). TYPE1 : Tape speed varies linearly over the range −1 to +1. TYPE2 : Tape speed varies stepwise as shown in the figure below ^{a)} over the range −3 to +3. (Characterized by a zone around −1 and +1 where the tape speed is independent of the search dial rotation rate) TYPE3 : Tape speed varies linearly over the range −3 to +3, as shown in the figure below ^{b)} . TYPE4 : Tape speed varies stepwise as shown in the figure below ^{c)} over the range −2 to +2. (Characterized by a zone around −1 and +1 where the tape speed is independent of the search dial rotation rate)
117	CONTROL PANEL SELECTION	Select the control panel function when the PANEL SELECT switch on the switch panel is set to REAR. SW : Only the control panel connected to the CONTROL PANEL connector on the connector panel functions. PARA : The control panels connected to the CONTROL PANEL connectors on the switch panel and connector panel both function.



(Continued)

Menu items in the range 100 to 199, relating to the control panels (Continued)

Item number	Item name	Settings
118	KEY INHIBIT SWITCH EFFECTIVE AREA	Select which switches and buttons can be operated when the KEY INHIBIT switch on the switch panel is set to ON. The following sub-items control different sets of switches and buttons independently.
	Sub-item	
	1 REMOTE SELECT	Select whether the REMOTE 1(9P) and 2(50P) buttons in the upper control panel are enabled. DIS : Disabled ENA : Enabled
	2 AUDIO/F-KEY	Select whether the audio signal selection buttons and F1 to F6 buttons in the lower control panel are enabled. DIS : Disabled ENA : Enabled
119	MODE CONTROL	Select which switch and button operations can be carried out from the lower control panel of this unit or an external control panel connected to this unit. DIS : All switches and buttons other than the audio signal selection buttons and F1 to F6 buttons are disabled. DMC : All switches and buttons for DMC playback other than the audio signal selection buttons and F1 to F6 buttons are disabled. ENA : All switches and buttons other than the audio signal selection buttons and F1 to F6 buttons are enabled.
119	VARIABLE SPEED LIMIT IN KEY PANEL CONTROL	Select the playback speed range when carrying out playback in variable speed mode from the control panel of this unit. OFF : For MPEG IMX and analog tapes, from -1 to +3 times normal speed; for Digital Betacam tapes, from -1 to +3 times normal speed; for Betacam SX tapes, -1 to +2 times normal speed. ON : For MPEG IMX, Betacam SX, Digital Betacam tapes, and analog tapes, from 0 to 1 times normal speed.
120	CTL LOCK IN VAR/SHTL	Select whether the tape transport should be phase-locked to the CTL signal during playback in variable speed or shuttle mode. OFF : Not phase-locked. ON : Phase-locked at the following speeds: -1, -0.5, 0.5, 1.0 and 2.0 times normal.
121	DT MODE	Select field or frame mode for variable speed playback. FIELD : Always field playback FRAME : Frame playback in the noiseless playback speed range; otherwise field playback. Frame playback provides higher-density still pictures than field playback. Note When using the digital Betacam format, this frame mode is valid for playback in the positive direction only.
125	AUTO REWIND	Select whether to rewind the tape automatically when playback reaches the end of a tape. DIS : Do not rewind the tape automatically. ENA : Rewind the tape automatically.
130	TIMER DISPLAY DIMMER CONTROL	Set the brightness of the time data/menu display panel. 0 to 7 : Set in this range. 0 is the brightest, and 7 the dimmest.
132	AUDIO PB VOLUME	Select whether each of the audio PB controls on the lower control panel is effective to control the audio playback level on each channel or the CH8/ALL CH control alone functions as a master control to control the audio playback level on all channels together. EACH : Each PB control is effective to control each channel. ALL : The CH8/ALL CH control alone functions as a master control. When "ALL" is selected, the ALL CH indicator to the right of the CH8/ALL CH control lights up.

(Continued)

8-4 Items in the Extended Setup Menu

Menu items in the range 100 to 199, relating to the control panels (Continued)

Item number	Item name	Settings
133	TELE-FILE CONTROL MODE	Selects the device used for data modification operations in the Tele-File menu. CONTROL PANEL : Operate with the control panel of this unit. REMOTE : Operate with remote devices connected to connectors such as REMOTE1, REMOTE2, and RS-232C.
134	TELE-FILE MENU AUTO POPUP	Selects whether to open the Tele-File menu automatically when a cassette with a Tele-File label is loaded. However, this is valid only when the function menu is HOME, HOME2, or page 1 to 5. OFF : Do not open the Tele-File menu automatically. ON : Open the Tele-File menu automatically.
135	TELE-FILE THREAD COUNTER CLEAR MODE	Selects whether to clear the thread counter when formatting a Tele-File. NOT CLEAR : Do not clear the thread counter. WHEN FORMAT : Clear the thread counter.
136	TELE-FILE IN OUT INPUT CONTINUE	Selects whether to continuously input log (IN and OUT point) data in the Tele-File menu screen. OFF : Do not continuously input log (IN and OUT point) data. ON : Continuously input log (IN and OUT point) data.

Menu items in the range 200 to 299, relating to the remote control interface

Item number	Item name	Settings
201	PARA RUN	Select whether or not to use synchronized operation for two or more VTRs. DIS : No synchronized operation ENA : Use synchronized operation Note To use synchronized operation for two or more VTRs, set item 201 to “ENA” on all of the VTRs.
202	CF FLAG (valid only in 625-line mode)	Select the mode for locking to the color framing sent from the remote controller. 8F : Eight-field locking mode 4F/8F : Four- or eight-field locking mode
211	REMOTE1 PORT	Select how to use the REMOTE 1-IN(9P) and REMOTE 1-OUT(9P) connectors on the connector panel. i&o : Both the IN and OUT connectors are effective whether in local or remote mode. in : Only the IN connector is effective whether in local or remote mode. out : Only the OUT connector is effective whether in local or remote mode. panel : Allows you to select i&o, in, or out using the function menu. Note When selecting “panel”, first define user-defined function key RMT1 in the HOME2 page. <i>On how to define user-defined function keys in the HOME2 page, refer to the Maintenance Manual Volume 1.</i>

Menu items in the range 300 to 399, relating to editing operations

Item number	Item name	Settings
301	VAR SPEED RANGE FOR SYNCHRONIZATION	<p>Select the playback speed range when carrying out playback in variable speed mode from a remote control unit connected to the REMOTE-1 IN(9P) connector or REMOTE-1 OUT (9P) connector.</p> <p>[-1~+3]: For MPEG IMX tapes, analog tapes, and Digital Betacam tapes, from -1 to +3 times normal speed; for Betacam SX tapes, -1 to +2 times normal speed.</p> <p>~+3.45 : For MPEG IMX tapes, analog tapes, and Digital Betacam tapes, from -1 to +3.45 times normal speed; for Betacam SX tapes, -1.5 to +2.3 times normal speed.</p> <p>WIDE: Undefined</p>
302	CAPSTAN RE-LOCKING DIRECTION	<p>In 525-line mode</p> <p>When the function menu item CAPSTN is set to 4F, select whether the capstan servo should lock by accelerating or decelerating.</p> <p>DECEL : Lock by decelerating.</p> <p>ACCEL: Lock by accelerating.</p> <p>In 625-line mode</p> <p>When the function menu item CAPSTN is set to 4F or 8F, select whether the capstan servo should lock by accelerating or decelerating.</p> <p>DECEL: Lock by decelerating.</p> <p>ACCEL : Lock by accelerating.</p>
306	DMC INITIAL SPEED	<p>Select the initial speed automatically set when carrying out DMC playback.</p> <p>MANU: The speed determined by the rotation of the search dial</p> <p>PLAY: Normal playback speed</p> <p>STILL: Stationary</p> <p>±0.03 to ±1, +2: Speed set in the range ±0.03 to +2 (select from +2, ±1, ±0.5, ±0.2, ±0.1, ±0.03)</p> <p>Note</p> <p>If you want to carry out DMC playback after setting this menu item, first press the DMC EDIT and DELETE buttons simultaneously to turn off the DMC EDIT button.</p>
307	AUTO-DELETION FOR INCONSISTENT DATA	<p>Select what happens when an erroneous DMC playback control point is set.</p> <p>MANU: A warning is given by flashing the DELETE button on the lower control panel.</p> <p>The operator must manually delete the unnecessary DMC playback control points or correct the erroneous DMC playback control point.</p> <p>NEG&E: When inconsistent DMC playback control points are set, such as when a speed variation end point is before a speed variation start point, or an on-air end point is before an on-air start point, or when too many DMC playback control points are specified, the previously set DMC playback control point is deleted.</p> <p>NEG: When inconsistent DMC playback control points are set, such as when a speed variation end point is before a speed variation start point, or an on-air end point is before an on-air start point, the previously set DMC playback control point is deleted. When more DMC playback control points than necessary are specified, the DELETE button on the control panel flashes to give a warning.</p> <p>Note</p> <p>Pressing the button corresponding to a DMC playback control point to be deleted and the DELETE button simultaneously, deletes the DMC playback control point. If an erroneous DMC playback control point is set (the DELETE button is flashing), DMC playback is not executed.</p>
320	DIGITAL AUDIO PB PROCESS ON EDIT POINT	<p>Select the treatment of audio playback at edit points.</p> <p>CUT : Carry out cut editing (possibly resulting in audio discontinuities at the edit point).</p> <p>FADE: Fade out and fade in.</p>

8-4 Items in the Extended Setup Menu

Menu items in the range 400 to 499, relating to preroll

Item number	Item name	Settings
401	FUNCTION MODE AFTER CUEUP	<p>Select the state that the unit goes into after a cuing-up operation.</p> <p>STOP: Stop (the “stop mode”)</p> <p>STILL: Still playback (in search mode)</p> <p>Note</p> <p>When controlling this unit from an editor with the standard constants set, select “STOP”.</p>
402	TIME REFERENCE FOR PREROLL	<p>When prerolling a tape with time code discontinuities, select whether or not to use CTL pulses to count time code from before a discontinuity.</p> <p>CTL: Use CTL pulses to count time code.</p> <p>TC: Do not use CTL pulses to count time code.</p>
403	AUTOMATIC PREROLL REFERENCE ENTRY	<p>Select whether or not the speed variation start point is automatically set by pressing the PREROLL button, when the speed variation start point is not set before starting preroll.</p> <p>DIS: Speed variation start point is not set automatically.</p> <p>ENA: Speed variation start point is set automatically.</p>
405	CUEUP BY CTL	<p>Select the tape transport mode when cuing. This setting is valid only when the function menu item CTL/TC is set to CTL.</p> <p>CAP: During cuing up, the tape transport is in the “pinch ON” state (maximum tape speed 10 times normal).</p> <p>REEL: During cuing up, the tape transport is in the “pinch OFF” state. As the tape approaches the cue up point and the tape speed drops, the tape transport switches to the “pinch ON” state.^{a)}</p> <p>To give priority to editing accuracy, select “CAP”.</p>

a) When controlled from an editor (BVE-2000/9100 etc.), selecting “REEL” allows high-speed cuing up.

Menu items in the range 500 to 599, relating to tape protection

Item number	Item name	Settings
501	STILL TIMER	<p>Select the time delay from the tape transport stopping (either the “stop mode” or the still playback mode in search mode) until the unit automatically switches to the tape protection mode, in order to protect the video heads and the tape.</p> <p>0.5S ... 8M ... 30M: Set the value in the range 0.5 seconds to 30 minutes.</p>
502	TAPE PROTECTION MODE FROM SEARCH	<p>Select the operation of the protection mode to protect the video heads and tape when in the still playback mode in search mode (jog/shuttle).</p> <p>STEP: Step forward at 1/30 normal speed every 2 seconds.</p> <p>STDBY: Switch to “Standby OFF mode” (the unit not on standby).</p> <p>T.REL: Switch to tension release mode (the tape tension slackened).</p>
503	TAPE PROTECTION MODE FROM STOP	<p>Select the operation of the protection mode to protect the video heads and tape when stopped (the “stop mode”).</p> <p>STDBY: Switch to “Standby OFF mode” (the unit not on standby).</p> <p>T.REL: Switch to tension release mode (the tape tension slackened).</p>
504	DRUM ROTATION IN STANDBY OFF	<p>Select whether the drum rotates in “Standby OFF mode”.</p> <p>OFF: Drum does not rotate.</p> <p>ON: Drum rotates.</p>
505	STILL TENSION	<p>Select the tape tension state in the still playback mode.</p> <p>NORM: Normal tape tension is maintained during still playback mode, ready for playback.</p> <p>LOOSE: Reduce the tape tension further from the NORM setting. (Select “LOOSE” when the unit is on standby for a long period of still playback, for example, in a library management system (LMS).)</p> <p>Note</p> <p>When LOOSE is selected, playback cannot be guaranteed.</p>

Menu items in the range 600 to 699, relating to the time code generator (Continued)

Item number	Item name	Settings
606	TC OUTPUT SIGNAL IN REGEN MODE	Select the signal output from the TIME CODE OUT connector during playback at normal (×1) speed. TAPE: The playback time code signal is output without regeneration. (The time code values do not correspond to the video output.) REGEN: The playback time code is output after regeneration.

Menu items in the range 700 to 799, relating to video control

Item number	Item name	Settings
703	BLANK LINE SELECT	Switch blanking on or off for individual lines in the vertical blanking interval. The Y/C signal and odd/even fields are blanked simultaneously. Note For playback of an analog Betacam cassette (Betacam SP, etc.) regardless of the setting of this item, the chrominance signal is blanked up to line 15.
	Sub-Item	
	0	ALL LINE - - -: Specify the blanking for each line separately. BLANK: Regardless of the setting of other sub-items, blank all lines which can be specified in this menu item. THROU: Regardless of the setting of other sub-items, switch off blanking for all lines which can be specified in this menu item.
In 525-line mode	12 ... 19	LINE 12 ... LINE 19 Specify blanking for lines 12 to 19. BLANK: Carry out blanking. THROU: Switch off blanking.
	20	LINE 20 Specify blanking for lines 20. BLANK: Carry out blanking. HALF: Carry out half-blanking. THROU: Switch off blanking.
In 625-line mode	9 ... 22	LINE 9 ... LINE 22 Specify blanking for lines 9 to 22. BLANK: Carry out blanking. THROU: Switch off blanking.
	23	LINE 23 Specify blanking for line 23. HALF: Carry out half-blanking. THROU: Switch off blanking.
705	EDGE SUBCARRIER REDUCER MODE	During playback of a composite signal, in the playback circuit the edge subcarrier reducer (ESR) is automatically switched on or off according to the VTR operation. When recording a "Non-Standard" signal, for example, if the color edges are not as good as with a proper signal, the ESR can be forced on. This item makes this selection. AUTO: ESR is switched on and off automatically. ON: ESR operation is forced on.

(Continued)

8-4 Items in the Extended Setup Menu

Menu items in the range 700 to 799, relating to video control (Continued)

Item number	Item name		Settings															
707	FORCED VERTICAL INTERPOLATION OFF		The “Y-add” ^{a)} function is normally switched on automatically during jog or variable speed playback. This item selects whether or not to force the “Y-add” function off. AUTO : Automatically switch the “Y-add” function on. OFF : Force the “Y-add” function off.															
709	CAV LEVEL FORMAT		Select whether the analog component output should be D-1 or Betacam. (Selectable only in 525-line mode) <table><tr><th>Format</th><th>Color bars</th><th>Y video</th><th>Y sync</th><th>R–Y/B–Y</th></tr><tr><td>D-1 CAV</td><td>100/0/100/0</td><td>700 mV</td><td>300 mV</td><td>700 mV</td></tr><tr><td>Betacam</td><td>100/7.5/77/7.5</td><td>714 mV</td><td>286 mV</td><td>700 mV</td></tr></table>	Format	Color bars	Y video	Y sync	R–Y/B–Y	D-1 CAV	100/0/100/0	700 mV	300 mV	700 mV	Betacam	100/7.5/77/7.5	714 mV	286 mV	700 mV
	Format	Color bars	Y video	Y sync	R–Y/B–Y													
	D-1 CAV	100/0/100/0	700 mV	300 mV	700 mV													
	Betacam	100/7.5/77/7.5	714 mV	286 mV	700 mV													
Sub-Item																		
	1	OUTPUT CAV LEVEL	Select the analog component output format. B-CAM : Betacam D1 : D-1															
710	INTERNAL VIDEO SIGNAL GENERATOR		Select the test signal to be output from the VTR’s internal test signal generator. OFF : No test signal is generated. (The VTR operates normally.) CB100 : 100% color bar signal (in 625-line mode) CB75 : 75% color bar signal (in 525-line mode) CB75R : 75% color bar signal (reverse) BOW : Bowtie signal PLSBR : Pulse & bar signal MLTBS : Multi-burst signal HSWP : H sweep signal 5STEP : 5-step signal RAMP : Ramp signal SH : Shallow ramp signal RED : Red signal GRAY : 50% flat signal WHITE : 100% flat signal BB : Black burst signal SDI : SDI check field signal NTC7 : NTC 7 test signal (selectable only in 525-line mode) LN330 : Line 330 test signal (selectable only in 625-line mode)															

a) The “Y-add” function is a circuit operation to interpolate the video signal vertically during jog or variable speed playback for the purpose of reducing the vertical movement of the playback picture.

(Continued)

Menu items in the range 700 to 799, relating to video control (Continued)

Item number	Item name	Settings
712	VIDEO PROCESS ON CAP LOCK 2FIELD	<p>When the function menu item CAPSTN or setup menu item 106 is set to 2F for 2-field playback, select whether or not to carry out a “picture shift”.</p> <p>OFF: No picture shift ON: Carry out picture shift.</p> <p>Note To eliminate the adverse effect of the residual chrominance subcarrier component in the Y signal that is the result of the Y/C separation, this unit automatically applies a shift to the playback image in the H direction, so that even in 2-field playback a satisfactory image can be obtained.</p>
713	VIDEO SETUP REFERENCE LEVEL (When operating in 525- line mode)	<p>Set the video setup amounts to be removed from a Betacam playback signal and to be added to a composite output signal. There are independent settings for a Betacam signal and a composite output signal (referred to below as an output signal).</p> <p>Note The setup amounts specified in this menu item have no connection with the function menu item SETUP.</p>
	Sub-Item	
	0 MASTER LEVEL	<p>When the Betacam playback signal and output signal settings are “MSTER” (master), the setup amount specified for this sub-item is removed from the Betacam playback signal and is added to the output signal.</p> <p>0.0% ... 7.5% ... 10.0%: Setting in this range, in 0.5% increments.</p>
	3 BETACAM PB LEVEL	<p>MSTER: Set the Betacam playback signal to the master setting.</p> <p>0.0% ... 7.5% ... 10.0%: Set the setup amount to be removed from the Betacam playback signal in this range, in 0.5% increments.</p>
	4 OUTPUT LEVEL	<p>MSTER: Set the output signal to the master setting.</p> <p>0.0% ... 7.5% ... 10.0%: Set the setup amount to be added to the output signal in this range, in 0.5% increments.</p>

(Continued)

8-4 Items in the Extended Setup Menu

Menu items in the range 700 to 799, relating to video control (Continued)
(Items 715 to 721: Settings for controlling the video processing system according to the menu settings.)

Item number	Item name	Settings
715	VIDEO GAIN CONTROL	Adjust the video output level. –2048 to [0] to +848
716	CHROMA GAIN CONTROL	Adjust the chroma output level. –2048 to [0] to +848
717	CHROMA PHASE CONTROL	Adjust the chroma phase. –128 to [0] to +127
718	SETUP LEVEL (525-line mode)/BLACK LEVEL (625-line mode)	Adjust the setup level (black level). –272 to [0] to +272
719	SYSTEM PHASE SYNC	Adjust the output signal sync phase. –128 to [0] to +127
720	SYSTEM PHASE SC	Adjust the output signal subcarrier phase. [0] to 1023
721	Y/C DELAY	For playback from an analog Betacam cassette, adjust the Y/C delay. –2048 to [0] to +2047

Note

When you make settings for items 715 to 721, set the function menu item V.PROC to MENU.

When it is set to MENU, all controls for video output processing on the control panel are disabled.

Item number	Item name	Settings
726	H BLANKING WIDTH	Select the horizontal blanking width of the video output signal. [NAROW] : Digital blanking (narrow) [WIDE] : Analog blanking (wide) When WIDE is selected, the horizontal blanking width complies with RS170A, and normally the blanking is widened and the image becomes narrower. It is recommended to select NAROW at the editing stage, then later, for broadcast transmission to select WIDE, to output a signal conforming to the standard. Note, however, that NAROW has to be always selected for SDI signals.
728	OUTPUT SCH PHASE	Set the subcarrier H phase. Default value: [800H]
733	C.PHASE TYPE–	Select the PAL chroma phase type. [HUE] : Vary the hue. [L.ALT] : Vary the SC phase of composite output.

Menu items in the range 800 to 899, relating to audio control

Item number	Item name	Settings
801	DIGITAL JOG SOUND	Turns the digital jog sound on and off. [OFF] : Digital jog sound is turned off. Audio signals of digital channels for which speed compensation has not been conducted are output even in still picture mode. [ON] : Digital jog sound is turned on.
802	DIGITAL AUDIO MUTE IN SHUTTLE MODE	Set the digital audio muting conditions during shuttle playback. [OFF] : Not muted. [CUEUP] : Muted during cue-up or preroll operations. [FULL] : Muted in shuttle mode.
805	AUDIO MONITOR OUTPUT MIXING	Select the audio mixing method used for digital audio signals and Betacam playback analog audio signals supplied to the MONITOR OUTPUT connector. [ADD] : Simple addition [RMS] : Root-mean-square [AVE] : Simple average

(Continued)

Menu items in the range 800 to 899, relating to audio control (Continued)

Item number	Item name	Settings
806	LEVEL METER SCALE	Select the mode in which digital audio levels are displayed. PEAK.0 : Displays the audio level as negative values with the maximum level set to 0 dB. REF.0 : Displays the audio level as positive and negative values with the reference level set to 0 dB.
807	AUDIO OUTPUT PHASE	Select the output timing of digital audio playback signals: (SDI and AES/EBU only). The reference position corresponds to a setting of 80H; when the setting is less than 80H, the output timing is advanced, and when it is higher than 80H, the output timing is delayed. (at 80H, 128 samples = approx. 2.7 ms, and 1 sample=approx. 20 µs) 0 ... 80 ... FF : Setting in this range
808	INTERNAL AUDIO SIGNAL GENERATOR	Select the operation of the internal audio test signal generator. OFF : No operation SILNC : Silent signal 1KHZ : At 1 kHz, -20 dB FS sine wave is supplied to all audio input channels.
809	AUDIO LEVEL METER DIMMER CONTROL	Set the brightness of the audio level meters. 0... 7 : Set in this range. 0 is the brightest, and 7 the dimmest.
823	NAU FLG PB	Controls the non-audio flag when the playback format is Digital Betacam or Betacam SX.
	Sub-item	
	1 CH1/CH2	During playback (except E-E mode), sets the digital audio non-audio flag as follows. OFF : OFF (the data is audio) ON : ON (the data is non-audio)
	2 CH3/CH4	AUTO : As follows, depending on whether tape data has been confirmed. • Tape data has been read and confirmed: ON or OFF, according to the data. • Tape data has not been confirmed: Current state is maintained. Notes • In the Betacam SX format, audio signals only are recorded. Therefore, the non-audio flag is OFF. • During playback of analog tapes, the non-audio flag is OFF regardless of the setting of this item. • In the MPEG IMX format, the non-audio flag follows the setting of maintenance menu item M372 during recording, playback, and E-E mode. <i>For more information about the maintenance menu item M372, refer to the Maintenance Manual.</i>
824	ANALOG OUTPUT SELECT	Select the analog audio signals (tracks 1 to 8) to be assigned to audio output channels 1 to 4.
	Sub-item	
	1 CH1/CH2	tr1/2 : Tracks 1 and 2 assigned to audio output channels 1 and 2 tr3/4 : Tracks 3 and 4 assigned to audio output channels 1 and 2 tr5/6 : Tracks 5 and 6 assigned to audio output channels 1 and 2 tr7/8 : Tracks 7 and 8 assigned to audio output channels 1 and 2
	2 CH3/CH4	tr1/2 : Tracks 1 and 2 assigned to audio output channels 3 and 4 tr3/4 : Tracks 3 and 4 assigned to audio output channels 3 and 4 tr5/6 : Tracks 5 and 6 assigned to audio output channels 3 and 4 tr7/8 : Tracks 7 and 8 assigned to audio output channels 3 and 4

(Continued)

8-4 Items in the Extended Setup Menu

Menu items in the range 800 to 899, relating to audio control (Continued)

Item number	Item name		Settings
827	AES OUT SEL		Select the audio signals to assign to AES/EBU audio output channels.
	Sub-item		APPI-DSP software Version 0.90 or higher is required to display this menu item.
			Note Check to be sure that the selected tracks are being output from the AES/EBU OUTPUT connectors.
	1	CH1/CH2	tr1/2 : Assign tracks 1, 2 to output channels 1, 2. tr3/4 : Assign tracks 3, 4 to output channels 1, 2. tr5/6 : Assign tracks 5, 6 to output channels 1, 2. tr7/8 : Assign tracks 7, 8 to output channels 1, 2.
	2	CH3/CH4	tr1/2 : Assign tracks 1, 2 to output channels 3, 4. tr3/4 : Assign tracks 3, 4 to output channels 3, 4. tr5/6 : Assign tracks 5, 6 to output channels 3, 4. tr7/8 : Assign tracks 7, 8 to output channels 3, 4.
828	SDI OUT SEL		Select the audio signals to assign to SDI audio output channels.
	Sub-item		The HD-SDI OUTPUT connector of the UP-CONTROL option also follows this menu item.
			Note Check to be sure that the selected tracks are being output from the SDI OUTPUT connectors.
	1	CH1/CH2	tr1/2 : Assign tracks 1, 2 to output channels 1, 2. tr3/4 : Assign tracks 3, 4 to output channels 1, 2. tr5/6 : Assign tracks 5, 6 to output channels 1, 2. tr7/8 : Assign tracks 7, 8 to output channels 1, 2.
	2	CH3/CH4	tr1/2 : Assign tracks 1, 2 to output channels 3, 4. tr3/4 : Assign tracks 3, 4 to output channels 3, 4. tr5/6 : Assign tracks 5, 6 to output channels 3, 4. tr7/8 : Assign tracks 7, 8 to output channels 3, 4.
829	SDTI OUT SEL		Select the audio signals to assign to SDTI audio output channels.
	Sub-item		Settings for SDTI CH5 to CH8 SEL are impossible for hardware reasons. DIF-FPGA change is required.
			This menu item applies when APR Board-14 or higher is installed.
			Note Check to be sure that the selected tracks are being output from the SDTI OUTPUT connectors.
	1	CH1/CH2	tr1/2 : Assign tracks 1, 2 to output channels 1, 2. tr3/4 : Assign tracks 3, 4 to output channels 1, 2. tr5/6 : Assign tracks 5, 6 to output channels 1, 2. tr7/8 : Assign tracks 7, 8 to output channels 1, 2.
	2	CH3/CH4	tr1/2 : Assign tracks 1, 2 to output channels 3, 4. tr3/4 : Assign tracks 3, 4 to output channels 3, 4. tr5/6 : Assign tracks 5, 6 to output channels 3, 4. tr7/8 : Assign tracks 7, 8 to output channels 3, 4.

Menu items in the range 900 to 999, relating to digital processing

Item number	Item name	Settings
903 ^{a)}	FREEZE MODE	<p>Select the freeze mode and freeze timing.</p> <p>FIELD: Freeze a video field. Field may be odd or even, according to the timing.</p> <p>FLD1: Freeze an odd field.</p> <p>FLD2: Freeze an even field.</p> <p>FRM12: Freeze a frame consisting of an odd field and following even field.</p> <p>FRM21: Freeze a frame consisting of an even field and following odd field.</p> <p>Odd and even fields are distinguished by the reference video signal.</p> <p>Changing the menu setting during a freeze does not affect the freeze image.</p> <p>The setting is reflected the next time a freeze is carried out.</p> <p>You can freeze an image using the DELETE button and TRIM + button.</p> <p><i>For details, see menu item 904.</i></p>
904 ^{a)}	FREEZE CONTROL FROM KEY PANEL	<p>Determine how the buttons used to freeze an image function.</p> <p>MOMNT: Holding the DELETE button and pressing the TRIM + button carries out a freeze. The freeze ends when the buttons are released.</p> <p>LATCH: Holding the DELETE button and pressing the TRIM + button carries out a freeze. The freeze continues even after the buttons are released.</p> <ul style="list-style-type: none"> • To update the freeze image Hold the DELETE button and press the TRIM + button again. • To end the freeze Hold the DELETE button and press the TRIM – button.
905 ^{a)}	AUTO FREEZE CONTROL	<p>Set the auto freeze function operation (conditions for ending a freeze, etc.).</p> <p>In normal playback, if there is a sudden worsening of the channel condition (entry into unrecorded area), this function freezes the image.</p> <p>DIS: Disable the auto freeze function.</p> <p>MODE1: End the freeze when signals which can be played back normally are restored.</p> <p>MODE2: End freeze automatically on playback after stopping.</p> <ul style="list-style-type: none"> • The automatic freeze mode is determined by item 903. • The freeze is ended immediately, regardless of the above conditions, when this unit is switched to cue up or eject mode.
906 ^{a)}	STOP FREEZE CONTROL	<p>Select whether or not the STOP FREEZE function should operate.</p> <p>DIS: Does not operate.</p> <p>ENA: Operates.</p>
915	SDTI-CP OUTPUT FORWARD ERROR CORRECTION	<p>Select whether or not to add an FEC (Forward Error Correction) signal for protection against SDTI-CP signal transfer errors.</p> <p>ON: Add an FEC signal.</p> <p>OFF: Do not add an FEC signal.</p> <p>Note</p> <p>Although the FEC specifications are provided in the SDTI-CP (SMPTE 326M) standards, FEC is not supported in some devices.</p>

a) Not supported in this version of the unit

9-1 Removing a Cassette When Tape Slack Occurs

If tape slack occurs in the unit, it is necessary to remove the upper lid and sound baffle. This job should always be entrusted to a technician who has undergone service training.

For details, refer to Section 1-17 in the Installation Manual.

9-2 Head Cleaning

To clean the video heads and audio heads, always use the special-purpose Sony BCT-HD12CL cleaning cassette.

If you insert the cleaning cassette, it is automatically ejected after a head cleaning operation which lasts for 5 seconds.

Follow the instructions with the cleaning cassette carefully, as inappropriate use of the cleaning cassette can damage the heads.

Notes

- When carrying out head cleaning without using the automatic cleaning function, be sure to eject the cleaning cassette after use in order not to damage the heads.
- You cannot use the BCT-5CLN cleaning cassette.

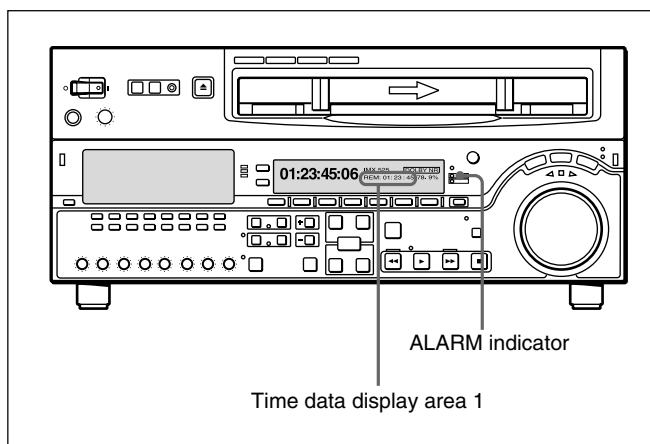
9-3 Error Messages

This unit is equipped with a self-diagnosis function, and if a problem is detected, displays an error message in the time data display and on the monitor.

If an error message appears, contact your Sony service representative.

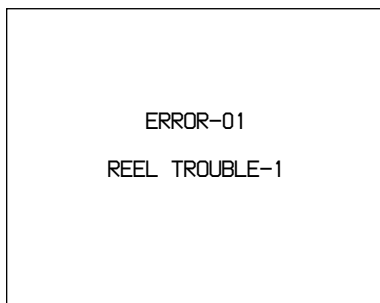
Indications in the time data display

If a problem is detected, the ALARM indicator in the lower control panel lights, and an error message and error code appear in time data display area 1.



Indications on the monitor

The error message and code also appear superimposed on a monitor connected to the COMPOSITE VIDEO OUTPUT 3 (SUPER) connector or SDI OUTPUT 3 (SUPER) connector. Depending on the error code, an indication of the source of the problem may appear as a secondary error message.



Error message displays

- To display error messages and codes superimposed on the monitor, set F4 (CHARA) in function menu page 4 to ON.
- Some error messages have no associated error codes. In this case, they appear over the time data area.
- Error messages with error codes are saved in non-volatile memory as an error log.
- In some cases the error message is slightly different on the monitor and in the time data area.

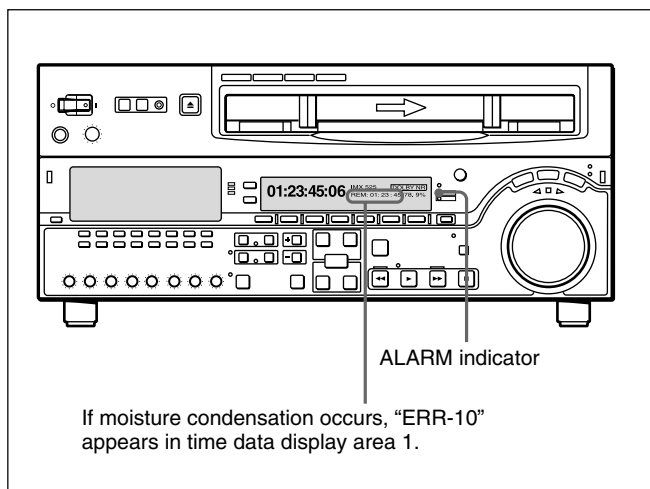
Error Message List

Code	Message	Description
–	NO COMMUNICATION	Abnormality in the interface between the lower control panel (KY-464/465 board) and SYS CPU (SS-89 board) has been detected on the lower control panel side.
01	REEL TROUBLE	Tape slacking has been detected in the threading or unthreading operation.
02	REEL TROUBLE	Tape slacking or tape breaking has been detected in the SEARCH, FF, or REW mode.
03	REEL TROUBLE	Tape slacking, tape breaking, or supply or take-up reel locking has been detected in the PLAY mode.
04	REEL TROUBLE	A malfunctional tape transport speed has been detected in the FF or REW mode.
05	REEL TROUBLE	A malfunctional operation of the supply or take-up reel has been detected during cassette insertion.
06	TAPE TENSION	Excessive tape tension has been detected in the PLAY mode.
07	CAPSTAN TROUBLE	Malfunction of capstan motor has been detected.
08	DRUM TROUBLE	Malfunction of drum motor has been detected.
09	TH/UNTH MOTOR	Malfunction of threading or unthreading operation has been detected.
0A	THREADING	The tape top processing has not been completed in the threading mode.
10	HUMID	Dew condensation has been detected.
11	TAPE T/E SENSOR	The tape top and tape end have been detected simultaneously.
12	TAPE TOP SENSOR	Malfunction of tape top sensor has been detected.
13	TAPE END SENSOR	Malfunction of tape end sensor has been detected.
14	FAN MOTOR	Malfunction of cooling fan motor has been detected.
20	CASS COMP MOTOR	Malfunction of cassette compartment-up or down operation has been detected.
21	REEL SFT MOTOR	Malfunction of movement of the reel table corresponding to the cassette size has been detected.
22	REEL POS SENSOR	The L-cassette and S-cassette positions of the reel table have been detected simultaneously.
23	THRED RING SENS	The thread end and unthread end states of the threading ring have been detected simultaneously.
92	INTERNAL I/F1	Abnormality in the interface between SYS CPU (on SS-89 board) and other CPU/MPU has been detected.
93	CPU INITIALIZE ERROR	Abnormality in the interface between SV CPU (on SS-89 board) and DRUM CPU (on DR-414 board) has been detected.
95	OTHERS NV-RAM ERROR	Abnormality has been detected in the operation of an NV-RAM on FP-119 board.
96	SY NV-RAM ERROR	Abnormality has been detected in the operation of an NV-RAM (on SS-89 board) for the system control system.
97	SV NV-RAM	Abnormality has been detected in the operation of an NV-RAM (on DR-414 board) for the servo system.
98	RF NV-RAM ERROR	Abnormality has been detected in the operation of an NV-RAM (on EQ-84 board) for the RF system.
99	INTERNAL I/F 2	Abnormality in the interface between SYS CPU (on SS-89 board) and SERVO CPU (on SS-89 board) or MPU (on EQ-84 or DM-123 board) has been detected.

9-4 Moisture Condensation

When the unit is suddenly moved from a cold to a warm location, or used in a very humid place, moisture from the air can condense on the head-drum. This is called moisture condensation. If the tape is run in this state, it can adhere to the drum. To prevent such a condition from occurring, the unit is provided with a moisture detecting function.

If moisture condenses on the head-drum while the unit is in use, the ALARM indicator lights and “ERR-10” is displayed in the time data display area 1.



If this happens, the drum and capstan motors stop and the cassette is automatically ejected. Then, the drum starts to rotate again to dry its surface. In this state, the unit is not operable. When the moisture has evaporated, the error message disappears and the ALARM indicator goes off.

If “ERR-10” appears and the ALARM indicator lights immediately after powering the unit on

Leave the unit powered on and wait until the error message disappears and the indicator goes off. While the indicator is lit, you cannot insert a cassette. When the indicator goes off and the error message disappears, you can use the unit.

If you move the unit from a cold to a warm location

Leave the unit powered off for about 10 minutes, in order to give the unit time to detect moisture condensation.

9-5 Regular Checks

9-5-1 Digital Hours Meter

The hours meter can display seven items of information, in corresponding display modes, about the operational history of the unit. Use it as a guide in scheduling periodic maintenance.

Display modes of the hours meter

H01: OPERATION mode

Displays the total number of hours the unit has been powered on in units of 1 hour.

H02: DRUM RUNNING mode

Displays the total number of hours the drum has run with tape threaded in units of 1 hour.

H03: TAPE RUNNING mode

Displays the total number of hours the unit has been in fast forward, rewind, playback, or search (except for stop and still) mode in units of 1 hour.

H04: THREADING mode

Displays the total number of times tape has been threaded in the unit.

H12: DRUM RUNNING mode (resettable)

Same as H02 except that the count is resettable. This can be used as a guide in determining when to replace the drum.

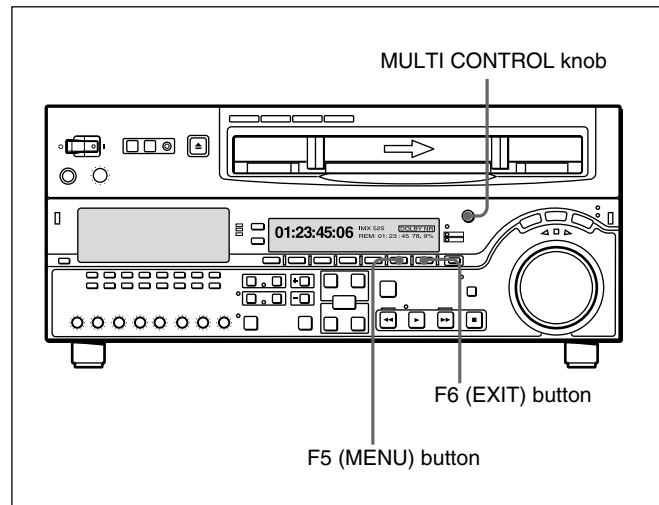
H13: TAPE RUNNING mode (resettable)

Same as H03 except that the count is resettable. This can be used as a guide in determining when to replace such components as fixed heads and pinch rollers.

H14: THREADING mode (resettable)

Same as H04 except that the count is resettable. This can be used as a guide in determining when to replace, for example, the threading motor.

Displaying the hours meter



To display the hours meter

Press the F5 (MENU) button, then turn the MULTI CONTROL knob to display the required item in the time data display.

To exit from the hours meter

Press the F6 (EXIT) button.

9-5 Regular Checks

9-5-2 Maintenance Timings

Use the following table as a timing guide for checking and replacing components of the unit. These intervals are not guaranteed lifetimes; the timing for replacing components depends on the particular conditions of use. In particular, depending on the degree of dirt contamination and abrasion, pinch rollers and cleaners may require replacement earlier than suggested by this table.

Note that an arrow in the table means that the component to be replaced is part of the assembly the arrow points to, which must be replaced as a whole.

For information on severe conditions (frequent threading/unthreading) or how to replace components, refer to the Maintenance Manual Volume 1.

Component	Digital hours meter indication (menu number in parenthesis)	Guideline replacement intervals					
		R: Replace C: Check, and replace if necessary					
		1000 hrs	2000 hrs	3000 hrs	4000 hrs	5000 hrs	6000 hrs
Upper drum	Drum running time (H02)			C	C	C	C(↓)
Drum assembly							C
Brush slip ring assembly				R			R(↑)
Video head cleaner (roller)				R			R
Pinch roller assembly	Tape running time (H03)			R			R
Reel table assembly					R (Replace at interval of 4000 hours.)		
Pinch application assembly	Tape running time (H03)						R
Fan motor (card)	Operation time (H01)	Replace after 40,000 hours					
Fan motor (MD)		Replace after 40,000 hours					
Fan motor (power supply)		Replace after 40,000 hours					

Specifications

General

Power requirements	100 to 240 VAC, 50/60 Hz
Power consumption	1.9 A (190 W)
Peak inrush current	(1) Power ON, current probe method: 54 A (240 V), 20 A (100 V) (2) Hot switching inrush current, measured in accordance with European standard EN55103-1: 16 A (230 V)
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	-20°C to +60°C (-4°F to +140°F)
Humidity	20 to 90%
Mass	23 kg (50 lb 11 oz)
Dimensions (w/h/d)	427 × 194 × 544 mm (16 ⁷ / ₈ × 7 ³ / ₄ × 21 ¹ / ₂ inches)

Tape transport system

Tape speed	Digital Betacam: 96.7 mm/s MPEG IMX: 64.5 mm/s (525/60) 53.8 mm/s (625/50) Betacam SX: 59.6 mm/s Analog Betacam: 118.6 mm/s (525/60) 101.5 mm/s (625/50)
Digital Betacam playback time	124 minutes with BCT-D124L
MPEG IMX playback time	184 minutes with BCT-184MXL (525/60) 220 minutes with BCT-184MXL (625/50)
Betacam SX playback time	194 minutes with BCT-194SXL

Analog Betacam playback time	90 minutes with BCT-90MLA (525/60) 108 minutes with BCT-90MLA (625/50)
Fast forward/ rewind time	Approx. 3 minutes with BCT- 184MXL
Search speed	
Shuttle mode	Digital Betacam playback: Still to approx. ±50 times normal playback speed MPEG IMX playback: Still to approx. ±78 times normal playback speed (625/50) Still to approx. ±60 times normal playback speed (525/60) Betacam SX playback: Still to approx. ±78 times normal playback speed (625/50) Still to approx. ±60 times normal playback speed (525/60) Analog Betacam playback: Still to ±35 times normal playback speed (525/60) Still to ±42 times normal playback speed (625/50)
Variable speed mode	Digital Betacam playback: -1 to +3 times normal playback speed MPEG IMX playback: -1 to +3 times normal playback speed Betacam SX playback: -1 to +2 times normal playback speed Analog Betacam playback: -1 to +3 times normal playback speed
Jog mode	Still to ±1 times normal playback speed
Servo lock time	0.5 (525/60)/0.7 (625/50) second or less (from standby on)
Load/unload time	6 seconds or less

Specifications

Recommended tapes

- MPEG IMX cassettes (S, L):
 - BCT-6MX/12MX/22MX/32MX/60MX
 - BCT-64MXL/94MXL/124MXL/184MXL
- Digital Betacam cassettes (S, L)
- Betacam SX cassettes (S, L)
- Betacam SP cassettes (S, L)
- Betacam cassettes (S, L)

Digital video system

Digital video signal system

- Sampling frequency
 - Y: 13.5 MHz
 - R–Y/B–Y: 6.75 MHz
- Quantization 8 bits/sample
- Compression MPEG2 4:2:2P@ML
- Channel coding S-I-NRZI PR-IV
- Error correction Reed-Solomon code

Analog component output

- Bandwidth
 - Y 0 to 5.75 MHz +0.5 dB/–2.0 dB
 - R–Y/ B–Y 0 to 2.75 MHz +0.5 dB/–2.0 dB
- S/N ratio 56 dB or more
- K factor (2T pulse) 1% or less

Analog composite output

- Bandwidth (Y) 0 to 5.75 MHz +0.5 dB/ –2.0 dB
- S/N ratio 53 dB or more
- Differential gain 2% or less
- Differential phase 2° or less
- Y/C delay 20 ns or less
- K factor (2T pulse) 1% or less
- Output SCH phase
 - Based upon RS-170A/CCIR R.624-3
 - (Adjustable by using the menu)

Digital audio system

Digital audio (CH1 to CH8) signal format

- Sampling frequency 48 kHz (synchronized with video)
- Quantization 16 bits/sample or 24 bits/sample
- Wow and flutter Below measurable level
- Headroom 20 dB (or 18 dB, selectable)
- Emphasis T1= 50 μs, T2=15 μs (on/off selectable using function menu)

Analog output

- A/D, D/A quantization 24 bits/sample
- Frequency response 20 Hz to 20 kHz +0.5 dB/ –1.0 dB (0 dB at 1 kHz)
- Dynamic range 90 dB or more (at 1 kHz, emphasis on, 16 bits/48 kHz) 95 dB or more (at 1 kHz, emphasis on, 24 bits/48 kHz)
- Distortion 0.05% or less (at 1 kHz, emphasis on, reference level (+4 dBm))
- Crosstalk –80 dB or less (at 1 kHz, between any two channels)

Digital Betacam playback

Video

Bandwidth	Y	MSW-M2100: 0 to 5.75 MHz +0.5 dB/−0.5 dB MSW-M2100P: 0 to 2.75 MHz +0.5 dB/−0.5 dB
	R−Y/B−Y	0 to 2.75 MHz +0.5 dB/−0.5dB
S/N ratio		62 dB or more
K factor		1 % or less

Digital Audio (CH1 to CH4)

Frequency response (0 dB at 1 kHz)	20 Hz to 20 kHz +0.5 dB/−1.0 dB
Dynamic range	95 dB (at 1 kHz, emphasis on)
Distortion (T.H.D at 1 kHz reference level)	0.05 % rms (emphasis on)
Wow and flutter	Below measurable level

Analog Audio (cue track)

Frequency response (0 dB at 1 kHz)	100 Hz to 12 kHz + 3 dB/−3 dB
S/N ratio (at 3 % distortion level)	45 dB (at 1 kHz)
Distortion (T.H.D at 1 kHz reference level)	2 % or less
Wow and flutter	MSW-M2100: Less than 0.2 % rms MSW-M2100P: Less than 0.2 % (DIN 45507 weighted)

Betacam SX playback

Video

Bandwidth	Y	MSW-M2100: 0 to 4.5 MHz +0.5 dB/−3.0 dB MSW-M2100P: 0 to 5.5 MHz +0.5 dB/−3.0 dB
	R−Y/B−Y	0 to 2.0 MHz +0.5 dB/−3.0 dB
S/N ratio		56 dB or more
K factor (2T pulse)		1 % or less

Audio

Frequency response	20 Hz to 20 kHz +0.5 dB/−1.0 dB (0 dB at 1 kHz)
Dynamic range	90 dB or more (at 1kHz, emphasis on)
Distortion	0.05 % or less (at 1 kHz, emphasis on, reference level (+4 dBm))

Analog Betacam playback (MSW-M2100)

Video

		Metal tape	Oxide tape
Bandwidth	Y	30 Hz to 4.5 MHz +0.5 dB/ −4.0 dB	30 Hz to 4.1 MHz +0.5 dB/ −6.0 dB
	R−Y/ B−Y	30 Hz to 1.5 MHz +0.5 dB/−3.0dB	30 Hz to 1.5 MHz +0.5 dB/−3.0 dB
S/N ratio	Y	51 dB or more	48 dB or more
	R−Y/ B−Y	48 dB or more	45 dB or more
K factor (2T pulse)		2% or less	3% or less
LF non-linearity	Y	3% or less	
	R−Y/ B−Y	4% or less	
Y/C delay		20 ns or less	

Specifications

Audio

		Metal tape	Oxide tape
LNG	Frequency response (at 10 dB below reference level ^{a)})	50 Hz to 15 kHz +1.5 dB/ −3.0 dB	50 Hz to 15 kHz +3.0 dB
	S/N ratio (at 3% distortion level)	72 dB or more	50 dB or more (Dolby NR off)
	Distortion (THD at 1 kHz reference level ^{a)})	1% or less	2% or less
	Wow and flutter	0.1% rms or less	
AFM	Frequency response (at reference level ^{a)})	20 Hz to 20 kHz +0.5 dB/−2.0 dB	
	S/N ratio (at 3% distortion level)	85 dB or more	
	Distortion (THD at 1 kHz reference level ^{a)})	0.5% or less	

a) Reference level: +4 dBm

Analog Betacam playback (MSW-M2100P)

Video

		Metal tape	Oxide tape
Bandwidth	Y	25 Hz to 5.5 MHz +0.5 dB/−4.0 dB	25 Hz to 4.0 MHz +0.5 dB/−6.0 dB
	R−Y/ B−Y	25 Hz to 2.0 MHz +0.5 dB/−3.0 dB	25 Hz to 1.5 MHz +0.5 dB/−3.0 dB
S/N ratio	Y	48 dB or more	46 dB or more
	R−Y/ B−Y	48 dB or more	45 dB or more
K factor (2T pulse)		2% or less	3% or less
LF non-linearity	Y	3% or less	
	R−Y/ B−Y	4% or less	
Y/C delay		20 ns or less	

Audio

		Metal tape	Oxide tape
LNG	Frequency response (at 20 dB below peak level ^{a)})	50 Hz to 15 kHz +1.5 dB/−3.0 dB	50 Hz to 15 kHz ±3.0 dB
	S/N ratio (at 3% distortion level) (CCIR 468-3 weighted)	68 dB or more	62 dB or more
	Distortion (THD at 1 kHz reference level ^{b)})	1% or less	2% or less
	Wow and flutter	0.1% rms or less	
AFM	Frequency response (at reference level ^{b)})	20 Hz to 20 kHz + 0.5 dB/−2.0 dB	
	S/N ratio (at 3 % distortion level)	More than 72 dB (CCIR 468-3 weighted)	
	Distortion (THD at 1 kHz reference level ^{b)})	Less than 0.5 %	

a) Peak level: +8 dB above reference level

b) Reference level: +4 dBm

Processor adjustment range

Video level	± 3 dB/ $-\infty$ to +3 dB selectable
Chroma level	± 3 dB/ $-\infty$ to +3 dB selectable
Setup level (MSW-M2100)	± 30 IRE
Black level (MSW-M2100P)	± 210 mV
Y/C delay	± 100 ns (in analog Betacam playback)
Chroma phase	$\pm 30^\circ$
System phase	Sync: ± 15 μ s SC: ± 200 ns

Input connectors

REF. VIDEO INPUT

BNC (2 in loop through connection)
Black burst or composite sync
0.3 Vp-p, 75 Ω , sync negative

Output connectors

SDI OUTPUT	BNC (3 including 1 for character superimposition) Serial digital (270 Mbits/s) SMPTE 259 M/ITU-R BT.656
SDTI-CP OUTPUT	BNC (2) SMPTE 326M
COMPONENT VIDEO OUTPUT	BNC (3 for 1 set) Y: 1.0 Vp-p, Sync negative R-Y/B-Y: 0.7 Vp-p, 75 Ω , with 100% color bar for MSW-M2100P and with 100% or 75% color bar selectable for MSW-M2100
COMPOSITE VIDEO OUTPUT	BNC (3 including 1 for character superimposition) 1.0 Vp-p, 75 Ω , Sync negative
AUDIO OUTPUT CH1/2/3/4	XLR 3-pin, male (4) +4 dBm at 600 Ω load, low impedance, balanced

AUDIO OUTPUT (AES/EBU) CH1/2, 3/4, 5/6, 7/8
BNC (4)

Complies with AES-3id-1995

MONITOR OUTPUT (L/R)

XLR 3-pin, male (2)
+4 dBm at 600 Ω load, low impedance, balanced

TIME CODE OUT

XLR 3-pin, male (1)
2.2 Vp-p, low impedance, balanced

PHONES

JM-60 stereo phone jack
 $-\infty$ to -12 dBu at 8 Ω load, unbalanced

CUE OUT

XLR 3-pin, mail
+4 dBm at 600 Ω load, low impedance, balanced

Remote connectors

CONTROL PANEL

10-pin (2), female
Front/rear selectable

REMOTE 1-IN(9P)

D-sub 9-pin, female

REMOTE 1-OUT(9P)

D-sub 9-pin, female

RS-232C

D-sub 9-pin, male

VIDEO CONTROL

D-sub 15-pin, male (for optional BVR-50/50P)

REMOTE 2 PARALLEL I/O(50P)

50-pin, female

Memory card insertion slot

PCMCIA

Accessories supplied

PSW 4 \times 16 screws for rack mounting (4)
Operation Manual (1)
Installation Manual (1)

Specifications

Optional accessories

- RCC-5G 9-pin remote control cable
- BVR-50/50P TBC Remote Control Unit
- RMM-131 Rack Mount Adaptor
- BCT-HD12CL Cleaning Cassette Tape
- AC power cord
- For customers in the U.S.A. and Canada
 - Part No. 1-557-377-11
 - Plug holder 3-613-640-01
- For customers in the United Kingdom
 - Part No. 1-782-165-11
 - Plug holder 3-613-640-01
- For customers in European countries other than the United Kingdom
 - Part No. 1-782-164-11
 - Plug holder 3-613-640-01

Design and specifications are subject to change without notice.

To prevent electromagnetic interference from portable communications devices

The use of portable telephones and other communications devices near this unit can result in misoperations and interference with audio and video signals.

It is recommended that portable communications devices near this unit be powered off.

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